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Medical First Aid in Eye Accidents and Injuries*

J. M. Carlisle, M.D.

THIS article is of timely importance, especially to industry—industrial physicians, nurses, and safety engineers.

First Aid Treatment at the Scene of the Accident

When an irritant chemical has entered the eye, the first objective should be the immediate removal of the offending agent. This can best be accomplished by immediate irrigation of the eye with copious quantities of clean running water. The patient should then be sent directly to the medical department.

Foreign bodies entering the eye, if not having chemically irritant properties or not producing a burning sensation, should not be touched at the scene, but the patient should be sent directly to the medical department. If there is an irritant reaction or a burning sensation from the material, the patient's eyes should be flushed with water immediately at the site of the accident.

Traumatic injuries should not be touched at the site of the injury but the patient should be sent directly to the medical department.

Treatment of Chemical Injuries in the Plant Medical Department

(1) Test reactions of the contents of the conjunctival sac by lightly touching indicator paper to the mucous membrane surfaces of the lower fornix. (Litmus paper is poor because a large pH shift is required before a color change from the blue to red or from red to blue occurs. Alkacid test paper or pHydrion paper is much better because definite and easily recognizable color changes take

* Extracted, with permission, from "Medical First Aid," appearing in *Industrial Medicine*, Vol. XII, No. 2, February, 1943.

place with a pH shift as small as 0.2 of a pH unit. Nitrazine paper is satisfactory for acid burns, but poor for strong alkali burns.)

(2) Local anesthetic should be placed in the eye.

(3) Thoroughly wash the eyebrows and tegument surrounding the eye in order to remove all residual chemical or foreign particulate matter which may be present. This may be done while the anesthetic is taking effect.

(4) Copious irrigation of the eye with saline or distilled water should be immediately instituted.

(5) Place two drops of a 2 per cent sodium fluorescein solution on the eye, allow a minute for staining of any denuded area, and then rinse with physiological saline.

(6) Examine the eye under a strong beam of light with the aid of a magnifying lens. This should be followed by slit-lamp examination.

(7) If there is still discomfort after the above procedure, local anesthetic may again be placed in the eye, then followed by irrigation.

Definitive Treatment for Acid Burns.—(1) Sodium bicarbonate (2 per cent solution) or a buffer solution for acid burns should be instilled over the globe and into the conjunctival sac from an eye-dropper in quantities of 3 to 5 c.c. every three to five minutes for 15 minutes. (The glass tube of an eye-dropper holds about 1 c.c.) While the duration of this irrigation will depend upon the cause, type, extent and severity of the injury, the irrigation should always be continued until there is a maintained neutral reaction upon testing the secretions in the fornices.

Note.—Most acid burns of the eye are instantaneous and not progressive and consist essentially in the precipitation and perhaps denaturing of the tissue proteins. The severity of the burn seems to depend upon the pH of the acid, the degree of dissociation, the character of the anion, and, most important, the time that the acid remains in the eye before it is diluted and removed. As a general rule, acid burns heal more rapidly and are much less difficult to handle than are alkali burns.

(2) Local anesthetics generally used are pantocaine, butyn, holocaine. Most uncomplicated cases of acid burns require a local anesthetic, an oily lubricant, and some bacteriostatic substance in

the cul-de-sac during the first 24 hours. The combined facilities and advantages of anesthetics, antiseptics, and lubricants are offered in butyn and metaphen or metycaine and merthiolate ophthalmic ointments. In every burn of the eye a symblepharon may develop if two denuded mucous membrane surfaces are approximated and immobilized. Liberal quantities of these or other ointments, together with twice daily compulsory inspections, will prevent many a symblepharon.

(3) Dark glasses, atropine, eye pads—the advantages to be derived from any or all of these when needed should not be overlooked.

As a general rule, acid burns are not progressive and secondary treatment is largely symptomatic. Additional measures include the use of the following:

a. Boric acid and ophthalmic ointment, together with an eye pad, or the instillation of sterile castor oil, cod liver oil or olive oil. (These will alleviate the symptoms which usually accompany acid burns, as well as promote regeneration of the corneal epithelium.)

b. Removal of any discharge from the fornices by instillation of a mild silver protein 10 per cent solution followed by copious irrigations of boric acid.

c. Butyn and metaphen ointment. (Rapid but short-acting local anesthetic.)

d. Metycaine and merthiolate (slower than butyn but more prolonged action).

e. Holocaine (phenacaine) 1 per cent should be used. (Cocaine should not be used in view of the fact that it delays healing, softens and swells the cells, and produces further damage to the epithelium.)

Definitive Treatment for Alkali Burns.—(1) Buffer solution for alkali burns should be instilled over the globe and into the fornices from an eye-dropper in quantities of 3 to 5 c.c. every three to five minutes for *30 to 50 minutes*. (The glass tube of an eye-dropper holds about 1 c.c.) While the duration of this irrigation will depend upon the cause, type, extent, and severity of the injury, the irrigation should always be continued until there is a maintained neutral reaction upon testing the secretions in the fornices.

Note.—Since alkali burns, unlike acid burns, are nearly always progressive, there is a great deal that the first aid as well as defini-

tive treatment has to offer, and especially does this apply to the benefits that will accrue from the continued irrigations with a mild buffer solution. In many cases it is advisable to keep these irrigations up for one-half hour or more.

(2) Cold compresses are useful in inflammatory affections of the conjunctiva. Edema of the lids and chemosis, so frequently seen in these burns, may be measurably reduced by a small cotton ball saturated with buffer solution, covered with a 4 x 4 inch gauze compress moistened in the cold buffer solution placed over the lids, or by the dry method (ice-bag), which, as a rule, is less painful to the patient if the skin of the face and forehead is protected. Ice should never be applied to the lids directly.

Note.—Since strong alkali solutions penetrate deeply into the cornea within a very few seconds, a resultant corneal ulcer may be anticipated by the swollen corneal stroma with leukocytic infiltration. Frequently the cornea temporarily becomes less cloudy, but on the fourth to eighth day a pannus of blood vessels enters the cornea from the limbus, over which the corneal epithelium does not regenerate. In the event the cornea or conjunctiva is severely burned and appears white or gray, a symblepharon or corneal lesions, including adhesions between the lid and the eyeball, may develop.

(3) Dark glasses, atropine, eye pads should be used as required.

Additional routine measures in the treatment of alkali burns of the eye should include:

a. Instillation of atropine sulfate—1 per cent ophthalmic ointment or solution (the solution when irrigation, the ointment when oil is used).

b. Careful twice-daily inspection for adhesions between the lids and the globe. (A glass rod—cocktail stirrer—is very useful in breaking these adhesions.)

c. Liberal quantities of boric acid ointment placed between the globe and lid to act as a barrier and serve in further prevention of adhesions.

d. Any discharge removed from the cul-de-sac by the instillation of a mild silver protein 10 per cent solution, followed by copious irrigations of boric acid.

e. Sulfathiazole ophthalmic ointment, 5 per cent, is a very useful

agent in preventing secondary infections. (Contra-indication is the frequently occurring irritation following the use of this drug in the eye.)

f. Butyn metaphen or metycaine merthiolate ophthalmic ointments may be used when rapidly acting local anesthetic and bacteriostatic effects are desired.

g. Holocaine (phenacaine), 1 per cent, should be used when a higher degree of anesthesia is necessary. (Cocaine should not be used in view of the fact that it delays healing, softens and swells the cells, and produces further damage to the epithelium.)

Definitive Treatment for Alkaloid Burns.—(1) Sodium thiosulfate (3 per cent solution) or some other specific mild oxidizing or reducing agent should be instilled over the globe and into the cul-de-sac from the eye-dropper, in quantities of 3 to 5 c.c. every three to five minutes for 30 to 50 minutes. While the duration of this definitive treatment will vary, depending upon the nature of the irritant and the time of exposure, subsequent treatment is essentially the same as for alkali burns.

Note.—Alkaloidal reactions are often insidious in their onset, since some produce immediate reactions and others produce signs and symptoms only after a quiescent period varying from four to 24 hours.

Treatment for Lime Burns.—While a freshly prepared 4 per cent solution of ammonium tartrate (reagent grade) is isotonic with lacrimal fluids, it rapidly turns acid upon standing. It is, therefore, advisable to test the solution before and during use. A solution that is over one hour old should not be used.

Treatment for Lacrimator Burns.—Since the gases, vapors, and liquids of lacrimators likely to be encountered as a result of enemy action may produce very severe injuries to the eye, definitive treatment other than the use of a 2 per cent solution of sodium bicarbonate should be obtained from sources affording specific therapeutic measures for these specific chemical war injuries.

Treatment for Flash Burns.—Boric acid solution used as an eyewash, castor oil as a lubricant, and holocaine for the relief of pain usually allow for complete recovery within four or five days. Mild anesthetics do not, as a rule, afford relief from the very severe pain which almost invariably follows even momentary flash exposure.

First Aid Treatment for Superficial Foreign Bodies in the Eye

The following are the only three first aid measures that the nurse or first aid attendant should be allowed to undertake in the removal of foreign bodies in the conjunctival fornices or on the eye:

(1) Rubbing the unaffected eye in an effort to produce lacrimation, which in turn may flush the foreign body from the eye or fornices.

(2) Irrigating the eye with clean water, physiological saline, boric acid solution or some satisfactory collyrium.

(3) Lightly passing or rolling a moistened cotton pledget over the corneal or conjunctival areas containing the foreign body. If this manipulation does not remove the foreign body, then the services of a physician should be obtained.

It is of great importance that first-aid routines should not include any more vigorous actions than the above. Unless measures are taken by the physician, undue and unwarranted destruction of tissue as well as contamination and resultant infection frequently results from the ministrations of well-meaning individuals with unskilled and untrained hands.

One frequently overlooked step in the treatment of foreign bodies in the eye is the prevention of a recurrence by removing from the eyelashes and eyebrows all particles which may have accumulated there. In many instances these are the same type of particles that were removed from the eye. Therefore, the cleansing of the eyelashes, eyebrows, and skin of the orbit is of considerable importance.

When a local anesthetic is used to aid in the removal of a foreign body on the eye, it is extremely inadvisable to allow the patient to leave the dispensary without first placing a pad over the eye, if the patient leaves before the effects of the anesthetic have worn off. Frequently marked damage results from allowing the patient with an anesthetized eye to return to the environment in which he acquired the first foreign body. He could detect the foreign body previously, but now he is unable to feel it because of the anesthetic.

Definitive Treatment for Superficial Foreign Bodies in the Eye

It is of the utmost importance that the patient be placed in a satisfactory position which will allow for perfect comfort and re-

laxation on the part of the patient as well as on the part of the physician.

These objectives can best be accomplished by the following:

(1) Place patient in reclining position.

(2) Administer local anesthetic, butyn, or pantocaine.

(3) The physician should sit at the patient's head. His elbows should rest on the cot, with his hands and face in such a position that he is looking and working from above downwards over the globe of the patient's eye.

Note.—There is much less danger of causing damage to the eye in this position than in having the patient sitting in a chair and the operator working from a sitting position in front of the patient. Working from in front, a slip of the physician's instrument is almost certain to result in puncturing or otherwise severely damaging the patient's eye—working from above, a slip is likely to give only a tangential injury of much lesser severity.

(4) No patient should be allowed to leave the dispensary after a foreign body has been removed from the cornea or conjunctiva without first placing onto the bulb a couple of drops of 2 per cent sodium fluorescein solution or aqueous mercurochrome. Frequently in cases where there is a history of a foreign body but no foreign body is found, fluorescein instillations will reveal scratched surfaces of the cornea which are missed without the staining aid.

The use of some lubricant with or without some local anesthetic and/or antiseptic, together with an eye dressing, should be continued until healing is complete. This can be determined by the failure of the cornea to stain with a 2 per cent sodium fluorescein solution or aqueous mercurochrome.

Treatment of Penetrating Foreign Bodies

These are by and large the most troublesome of eye injuries so far as permanent disability is concerned. The very best form of treatment for the industrial physician to use in the majority of instances is as follows:

(1) Apply eye pad and head bandage.

(2) Send the patient immediately to a hospital for care by an eye specialist and for removal under the exacting ritual of the operating room if additional measures are needed.

Note.—While a firm bandage over one eye will frequently eliminate friction between the eyeball and eyelid, if immobilization of one eye is required, both eyes must be bandaged.

Treatment of Corneal Abrasions

Corneal abrasions and deep lacerations not only expose the delicate nerve fibers, but also constitute a portal of entry for contamination. As a result, serious inflammation and infection frequently ensue. Corneal ulceration, often leaving permanent scarring and diminution of vision, may ultimately result. Immediate and proper definitive treatment is imperative if these serious sequelae to corneal injury are to be prevented or minimized.

Only a competent specialist in injuries of the eye is qualified to carry out adequate treatment for any but the most superficial lesions, and for this reason the physician in industry should confine his efforts to immediate diagnosis and simple measures for the relief of the intense pain caused by most corneal injuries. After a sterile dry gauze dressing has been applied over the eye and held in place by a circular bandage, the patient should be sent immediately to the eye specialist.

The instillation of a local anesthetic is usually the most effective means of securing immediate relief from pain. An aqueous solution should be used if the patient has not yet been seen by the ophthalmologist, since oily substances in the eye interfere with proper examination.

Conclusion

Of all the commonly occurring injuries seen in industrial practice, those to the eye carry the most serious potentialities for permanent, serious disability. Proper early treatment, however, can usually greatly minimize or prevent such a result. It must be re-emphasized, therefore, that all but the most trivial of eye injuries should be promptly referred to an ophthalmologist if the welfare of the employee, the pocketbook of the employer, and the reputation of the industrial physician are to receive maximum protection.

What Everyone Should Know About Glaucoma*

John M. McLean, M.D.

THE author points out what everyone should know about this blinding disease.

I WANT to talk to you about the eye condition known as glaucoma. Right here and now some of you may wonder what in heaven's name is glaucoma and also what earthly reason is there for being interested in glaucoma. I can answer that for you. If you prize your eyes, if you want to retain your sight, it is important that you should know about the menace of glaucoma. You should be interested in it because, if you know of its menace and are acquainted with its first signs, you may possibly save yourself from permanent disability should it strike you, or one of those near to you.

Thousands of people in this country are blind in both eyes. One out of every four of them is blind from glaucoma. Most of these unfortunate individuals are blind because glaucoma was not discovered in the early stages. Early diagnosis is of great importance.

The underlying cause of glaucoma is not known. Until the war many of the best eye physicians were hard at work tracking down the cause. Now most of their energies and talents are directed into other channels, but as soon as this war ends, the study and research in glaucoma will be resumed with added vigor. In the meantime this disease can be treated and can be controlled. Blindness can be prevented.

Over 90 per cent of the people who get glaucoma can have their sight saved if the disease is discovered soon enough. Most of those who go blind from glaucoma fall into two groups. The first are those who do not realize until very late that they have the disease.

* Presented originally as a radio talk.

The others are those who know they have it but disregard the doctor's advice and fail to carry out the proper treatment.

Why is it so important to discover glaucoma in its early stages? Because the damage which it causes can never be undone. That portion of the eyesight which has been destroyed can never be regained. But the damage can be stopped. Glaucoma can be controlled.

The public should know more about glaucoma. It is a disease which usually strikes people over forty and practically always attacks both eyes. It causes the pressure within the eye to become increased. That increased pressure is more than the delicate nerve fibers within the eye can stand. They are crushed until they atrophy and one by one they die. Since we cannot bring these dead tissues back to life, we cannot restore that part of the eyesight which has already been lost. Since we do not yet know the fundamental cause of glaucoma, we cannot prevent it; but we can control the pressure and preserve what eyesight is left. This is not a cure but it is control. It is not prevention of the disease, but it is prevention of blindness from the disease.

Glaucoma existed long before the fifth columnist or the saboteur was invented. The method of attack is the same—quietly destroying, silently boring from within, without warning, without notice.

How can you tell if you have glaucoma? Unfortunately, most of you can't. If the pressure within the eye becomes very high, that causes pain which gives you warning. Usually the pressure is high enough to do damage but not high enough to give you pain and warn you that your eyesight is threatened.

If glaucoma causes you pain, you are lucky. The pain will bring it to your attention. You will know enough to get expert care. But most of you who may have glaucoma will not have pain. Most of you will have no warning, or such slight indications that you will ignore them. Do you have to change your glasses frequently? Do you have slight dimming of vision? Do your eyes become a little red now and then? Do you have difficulty finding a seat in the movies? Do your eyes or head ache after a prolonged stay in the dark? Do you see halos around street lights? These things do not necessarily mean glaucoma, but they may. You may not even have these warnings.

When you reach the forties or thereabouts, most of you will have to have reading glasses. At least 20 per cent of you will get your glasses from eye physicians. You will be safe. If you have glaucoma, it will be discovered and you will be properly advised about treatment. The rest of you get your glasses from other sources. However, most of you go to your family physician. Ask him about glaucoma. Tell him about your eye symptoms. If you are over forty, ask him to feel your eyes through the closed lids to see if they are too hard. Ask him to look into your eyes with his ophthalmoscope for signs of pressure injury to the optic nerves. If he finds glaucoma, or if he suspects glaucoma, ask him to refer you to a competent eye physician. If your family doctor does not know one, ask your county medical society for a list of good eye doctors. Don't be guided by your neighbors' ideas. Beware of large signs advertising "free eye examinations." They are too likely to be worth just what you pay for them. If you cannot afford a good eye physician's office fee, by all means go to a good eye clinic. There are plenty of them in the metropolitan area. They are well equipped and staffed with competent doctors who can discover and treat glaucoma if you have it.

What will your eye physician do in his examination? He will test your vision and refract your eyes. If you need glasses for reading or general use, he will prescribe them. He will examine your eyes from front to back. He will look into them and examine the delicate tissues inside. He will test your visual fields. That means that he will examine your side vision as well as your vision straight ahead. This is important, for glaucoma usually destroys the side vision before it attacks direct central vision. He will test you for blind areas at the spots particularly vulnerable to glaucoma. Then he will measure the pressure in your eyes with an accurate little instrument specially designed for this purpose. If there is even a suspicion of glaucoma, he will probably make a number of special tests.

If you have glaucoma, your eye physician will give you advice about your diet and habits. He will plan and give you specific treatment to arrest the disease. This planning may take several visits and a period of observation, for it must be fitted exactly to your eyes and your particular situation. Then he will advise you

how often you should be seen to have your progress checked. It is of utmost importance for you to co-operate with him in periodic re-examinations. Remember that glaucoma cannot yet be cured. It can only be kept under control, and this requires regular observation to prevent it from getting out of control.

Sometimes it is not possible to control glaucoma with medical treatment alone. It may be necessary to have an operation to form a sort of "safety valve" to keep the pressure under control. If such an operation is necessary, by all means have it performed while your vision is still good. Do not make the mistake of waiting until you cannot see. When there is little left to save, glaucoma has outwitted medical science. Give medical science a chance to outwit glaucoma for you. Take the necessary steps to save your eyesight while it is still there to save.

What I have described thus far is the common form of glaucoma: the "silent thief" of vision. There is another type of glaucoma which is worth mentioning. It occurs less frequently and is much less insidious in its onset. This is an acute form which strikes hard and suddenly with little or no warning. It may be brought about by a severe emotional upset. However, it soon makes its presence very obvious. Pain in the eye and pain in the head are severe and may be unbearable. The vision suddenly becomes very blurred and foggy. The eye is obviously inflamed. This form of acute glaucoma is just as much an emergency as acute appendicitis. Call your doctor or go to a hospital without wasting time. Active treatment must be started at once. More often than not an emergency operation will have to be performed. After a successful operation has cured the acute attack, chronic glaucoma may set in. It must be watched for and treated.

Finally, a word of general advice. If you are middle-aged or older, remember that there is such a condition as glaucoma. If members of your family have it, your chances of getting it are a little greater than otherwise. Find out if you have the disease. If you do not, don't become a neurotic worrying about it. If you do have glaucoma, stick to your doctor's advice and treatment. If an operation is necessary, do not put it off. Remember that they are the only eyes you have and that glaucoma can be controlled. Blindness from glaucoma should be prevented.

Epidemic Keratoconjunctivitis*

THE Council on Industrial Health has approved publication of this special warning bulletin on epidemic keratoconjunctivitis. —C. M. Peterson, M.D., Secretary.

THIS report is issued jointly by the U. S. Public Health Service and the Committee on Industrial Ophthalmology of the Section on Ophthalmology, American Medical Association. It is recognized that relatively few cases of epidemic keratoconjunctivitis will be reported in areas which are not essentially industrial, but the condition has appeared so extensively throughout the country that the agencies sponsoring this report hope that physicians everywhere will be prepared to apply the recommendations listed below promptly and effectively.

Incubation Period

The incubation period in epidemic keratoconjunctivitis ranges from five to ten days.

Clinical Manifestations

The onset may be preceded by a low fever and a mild generalized malaise. The local ocular symptoms are merely those of a foreign body or conjunctival irritation. One eye is usually affected first, and in a large percentage of these cases the second eye becomes infected within five to eight days. Preauricular and submaxillary glandular involvement with tenderness is common in a high percentage of cases.

Edema of the lids and the conjunctiva, especially the transitional fold, is very frequent. The conjunctiva presents the appearance of a simple purulent conjunctivitis but with little or no formation of

* Reprinted, with permission, from the *Journal of the American Medical Association*, Vol. 121, No. 14, April 3, 1943.

pus. Small areas of pseudomembrane are not infrequent and, when removed, leave either small white dotted points or some bleeding points. The bulbar conjunctiva becomes edematous early. At this stage there is some lacrimation and photophobia, but real pain and blepharospasm do not appear until the cornea becomes involved.

The proportion of cases in which corneal involvement occurs varies from 50 per cent to 90 per cent. In six to twelve days after the conjunctivitis appears, the cornea becomes involved by the appearance of discrete gray infiltrates that lie in and immediately under the epithelial layer of the cornea. They may be confined to the periphery of the cornea, but in a large percentage of cases involve the pupillary area of the cornea directly. These infiltrates are discrete and seldom become complicated by an erosion of the corneal epithelium, with resultant staining with fluorescein. The extent of visual impairment depends on the number of infiltrates and their location.

Clinical Course

The disease is self-limited. In the majority of instances the conjunctivitis disappears spontaneously in fourteen to eighteen days. The corneal complications may disappear in seven days or may last for many months. The longer they persist the greater is the danger of permanent visual impairment.

Laboratory Findings

The scrapings of the conjunctiva show a preponderance of monocytes. Cultures and smears either are negative or show the usual contaminations.

Treatment

There is no specific treatment that has shown a definite influence on the course of the disease. During the acute stage the eyes should be kept clean with irrigations of boric acid, isotonic solution of sodium chloride, or 1:5,000 mercuric oxycyanide. If there is much photophobia, 1 per cent holocaine may be instilled at frequent intervals. Five per cent sulfathiazole ointment has been used, as has 5 per cent solution of sodium sulfathiazole sesquihydrate. For

persistent corneal infiltrates, the *x*-rays have seemingly yielded some results.

Period of Infectivity

It is not yet known how long the danger of transmission to others exists. At present, for practical purposes, a sufferer from epidemic keratoconjunctivitis may be allowed to return to work when the active conjunctivitis has disappeared.

Preventive Measures

At present the only preventive measure known is complete isolation of infected persons. As the disease has been transmitted through medical personnel, the most meticulous asepsis must be insisted on. Not only must physicians and nurses wash their hands thoroughly with soap and water after each patient, but also eye droppers, solutions and instruments must be sterilized to prevent infection of noncontaminated persons. The infected individual must be told of the danger of transmission of this disease to others, not only in the plant, but even in the home surroundings. It is suggested that in industrial plants where epidemic keratoconjunctivitis has made its appearance the following methods be adopted:

1. In smaller plants with a limited personnel, every individual with a red eye should be stopped at the entrance of the plant and sent direct to the plant physician to determine whether or not epidemic keratoconjunctivitis is present. In larger plants where such a procedure is not possible, supervisors and foremen should be instructed in detail to make rounds immediately when a fresh shift starts and send any individual with a red eye to the medical office.
2. If the cases are to be treated at the medical department of the plant, a separate room should be set aside for such cases, and in that room there must be exercised the most scrupulous asepsis even to washing the arms of the chairs in which the patient sits. Aside from the aseptic and separate care of the recognized cases of the disease, special cleanliness of the hands of the physician in the general clinic should be maintained with the use of an effective disinfectant between cases lest the infection be spread by means of undiagnosed cases, especially those suspected of having foreign bodies in the eye.

3. Every case of epidemic keratoconjunctivitis should be excluded from communal facilities of the plant until the inflammation has subsided to the point where the plant physician considers it no longer transmissible.

4. Explicit instructions should be given to every individual regarding the danger of transmission, emphasizing the decrease in the war effort as a result of the time lost from epidemic keratoconjunctivitis.

5. The local health authorities should be notified immediately of the existence of individual cases.

Public Health Nursing in a Trachoma Control Program*

Margaret S. Vaughan, R.N.

DESCRIBES the service of public health nurses in field service in the control of trachoma.

PUBLIC health nurses are accepting additional responsibility as public health programs are extended into comparatively new fields. While trachoma is definitely not a new disease, the efforts to include it in a public health preventive program in Arkansas are very recent. The earliest year in which this disease was reported to the State Board of Health appears to have been 1920, when 252 cases were recorded. Certain areas of the state, particularly the northern half, were recognized as centers where prevalence of this disease was frequently observed by physicians. It was in 1919 that Dr. L. Gardner, an ophthalmologist, located in Russellville, Pope County, requested the U. S. Public Health Service, then interested in establishing hospitals in the trachoma areas of the United States, to establish a hospital in Russellville for the treatment of this disease. Dr. Gardner's request was granted, and an old family residence, still standing in the town, was rented by the citizens to become the hospital. Patients from the surrounding states—Mississippi, Oklahoma, Tennessee—were received and treated here by the staff assigned by the Service to the hospital. Treatment was entirely local—medical applications and instillations, mechanical expression of granules, surgery and irrigations. This, of course, was before the day of the use of the sulfa drugs. The hospital was discontinued in 1926 and no public program existed in the state for the treatment of trachoma until 1939. Private

* Prepared for *Eye Health Institute*, held October 25 and 26, 1942, during the annual meeting of the American Public Health Association, St. Louis, Mo.

ophthalmologists, of course, continued to treat the disease in their regular practice.

The present program for control of trachoma is an outgrowth of legislation under the Social Security Act of 1935. Under the terms of this Act aid-to-the-blind programs were set up within the state under the Department of Public Welfare. A survey made in 1939 of cases receiving assistance in this program showed that 15 per cent of the blindness among applicants for aid to the blind resulted from trachoma. This survey also revealed that the disease was most prevalent in the northern section of the state. These facts established a definite need for a program of prevention as well as cure. A conference was held with Dr. Carl E. Rice, Surgeon, U. S. Public Health Service, in the spring of 1939 to determine the best method of controlling the trachoma problem in the state. It was decided to conduct a trial clinic in the northern part of the state, the detail of the procedure to be determined by the state consultant ophthalmologist. Because of lack of funds and the size of the district to be covered by the clinic, close supervision of the patient was not possible. The social status of the prospective patient being low, good co-operation could not be expected. Therefore, it was decided that large doses of sulfanilamide used under the conditions with which we must cope might have some unfavorable reaction. It was decided, therefore, to use very small doses of sulfanilamide supplemented by local application of the drug. The following procedure was set up, and the patients with no apparent physical disability which would contraindicate oral administration of sulfanilamide were thus treated:

The dosage was 20 grains per day to an adult male, 15 grains to an adult female, and 10 grains to a child. In addition to this, an 0.8 per cent solution of sulfanilamide was given to the patient to be dropped into the eyes four to six times per day. The patients who, for various reasons, were not considered good risks to treat orally with sulfanilamide, were given only the local treatment. The patients were all instructed to cleanse the eyes with warm water morning and night. No other medication was used. Each patient was given printed instructions to discontinue the tablets if any symptoms, such as nausea, rash, and the like, resulted, but to continue the drops.*

* Cosgrove, K. C.: Local Use of Sulfanilamide in Trachoma. *American Journal of Ophthalmology*, 1940, Vol. XXIII, August, pp. 911, 913.

Because the responsibility for administering the aid-to-the-blind program was established in the Department of Public Welfare, the trachoma control program was also planned and administered by this department. The initial plan was for diagnostic and treatment clinics in five areas in the northern half of the state, including follow-up supervision of the patients. The personnel employed by the Department of Public Welfare for this program consisted of a consultant ophthalmologist and one full-time nurse who had previously been employed by the State Department of Health. Five local part-time ophthalmologists were also employed to conduct the clinics in definite areas of the state. An initial clinic was held in each area after intensive publicity, which was followed by bi-monthly clinics in each area. The personnel of the local health departments in areas where clinics were held assisted at the clinics under the direction of the Department of Public Welfare nurse. This plan was in effect for eleven months.

In July, 1940, the trachoma control program was transferred to the State Health Department and placed under the Division of Communicable Disease Control. No change in the broad plan for carrying on the clinics was made; however, additional personnel, consisting of a full-time field clinician and one public health nurse, were added, making a field staff of one clinician and two public health nurses who worked with the local and supervisory ophthalmologists. This plan for carrying out a field clinic service, now definitely a health department responsibility, brought into focus the need for intelligent participation on the part of the local health personnel. There were many difficult problems: problems of additional personnel—public health nurses, clerks, lay workers—of suitable space and set-up; problems of equipment, good nursing procedures, and health teaching for the patients. These were some of the most apparent needs from the very first.

How was the public health nurse prepared for her new rôle? Although the trachoma control program was limited to less than one-half of the state, it was considered desirable to prepare the entire public health nursing staff for this new service. As assets to the problem, we counted our experience in conducting other types of clinics and our knowledge of communicable disease and understanding of basic communicable disease techniques. The need was for

more specific information in regard to the disease itself—a new one to many of the staff—and for appropriate routines and procedures for taking care of large groups of patients. Accordingly, a plan was devised for staff education in this subject. Briefly, this plan provided for six one-day study groups in selected centers within the state which were attended by the public health nurses and the medical directors from the separate local health departments. The material presented at these study groups was a combination of medical and nursing information. The field clinician of the trachoma control service presented information which the nurses and physicians needed for understanding the disease and giving intelligent care to the patients—cause, type, communicability and treatment. Lantern slides showing the typical appearance of the lids in the separate stages of the disease were shown; a vocabulary of eye terms was given. The second half of the day was spent in discussion of the nurse's part in the service, with a demonstration of the clinic set-up and of vision testing. Mimeographed material was distributed featuring the organization of clinics, use of the records, drawings of clinic set-up, and outlining duties for clinic personnel. The two field nurses assigned to the program had definite responsibilities in their respective areas. They were expected not only to make the arrangements for the clinic and "to work it up," but also to supervise and instruct the local nurses in observing the recognized procedures at the clinic.

In spite of much planning the clinics were far from satisfactory from the public health nurse's point of view, at this time. The number of patients attending the clinics was far too large to accomplish much more than the physician's examination and issuance of drugs. This also meant that additional nurses from the adjacent counties were assigned to assist on the clinic days, creating a further difficulty, since the local nurse in whose county the clinic was held frequently failed to have a conference with the patient after he had been seen by the physician. There was little time for any health teaching on a family basis.

Many patients suffering from refractive errors, strabismus, conjunctivitis, eye injuries, glaucoma and cataract came to the clinics and went away untreated because they did not have trachoma. These patients needed a service which the public health nurse could

assist them in receiving; they were a challenge to the public health nurse who was interested in the well-being of the whole patient. We felt that our interest, aroused to assist in a special service—trachoma—had led us to consider how a general eye service could be rendered.

The urgency of the nursing problems in connection with the clinic service forced our attention toward making improvements. To bring about the needed changes in procedures and to develop a general eye health program, a careful attack was planned. Advisory service was obtained from the National Society for the Prevention of Blindness, through a visit of their nursing associate to the state. A manual of trachoma nursing in use up to this time seemed inadequate and was revised to meet the needs of the nurses. An important change was made by delegating the responsibility for the clinic to the local health department instead of the trachoma field nurse. The local health department was responsible for all arrangements: contacting the patients, organizing clinic routine, instructing the personnel and supervising the clinic. The trachoma field nurse attended the clinics, but, as an assistant to the local nurse, she took her place as one of the nurses assisting in the many special nursing duties on the day of the clinic. The follow-up of the patients became a responsibility of the local public health nurse as a part of her generalized family health service.

The second phase of the efforts to improve this service from the public health nurse's point of view was directed toward stimulating the staff through more education about eye health.

Dr. K. W. Cosgrove, the supervising ophthalmologist of the Trachoma Control Program, generously offered his service in presenting three one-day lectures to the entire public health personnel, in which he presented an excellent review of anatomy and physiology of the eye, with special emphasis on some of the more frequently seen eye conditions.

In April, the National Society for the Prevention of Blindness again sent its representative to the state to give a two-day institute on eye health to a selected group of key nurses. This group was made up of the consultant nursing staff of the State Department of Health, teachers in schools of nursing, hospital administrators, nurses from hospital wards, boards of education, and the Red Cross

Chapter. Dr. Cosgrove participated, presenting a review of anatomy and physiology of the eye. Following this institute, the district nursing consultant staff of the State Department of Health planned and conducted two one-day study groups, composed of five to ten public health nurses, throughout the entire state. This breakdown of the information which had been presented at the institute reached every public health nurse employed by the State Department of Health. The material presented on the first day of the study conference included a review of fundamental knowledge of the eye and of the common eye disturbances and the causes of blindness; also the functions of the public health nurse which contribute to the promotion of eye health. On the second day the subject matter was on case finding and the promotion of eye health in the specific services of the public health program. References were given for future study; individual topics for discussion were assigned. There were free discussion and exchange of experiences and ideas. Information was presented concerning the state resources for patients with different types of eye defects: the Arkansas School for the Blind, the Department of Public Welfare and its program for remedial care, and the Crippled Children's Division and its services to the child with strabismus. Likewise was stressed the interest of various service clubs in helping children with eye defects. It was felt that these study groups served two valuable needs: the public health nurses were given a new sensitiveness to the importance of all the health factors which related to better eyesight, and the ways in which she could promote them; likewise, their knowledge was broadened regarding the trachoma clinic as a means of discovering patients in need of special attention. The revised material relating to the nurse's functions in trachoma control gave her definite instructions which would improve the quality of her participation in this program.

The services rendered by the trachoma field nurse at this time need a special word. Although the routine of the clinic has been worked out to a smoother pattern, and the number of patients attending clinics has been considerably reduced, permitting more individual teaching of the patient, it is important to bear in mind that an occasional clinic scheduled in a county has a tendency to be relegated to the background until the date for the clinic ap-

proaches. Also, with a turn-over in public health nurses occurring frequently, inexperienced nurses need special help. This applies also to the nurse who has been on the job since the inauguration of this program.

As a result of these things, the trachoma field nurse has a definite task constantly to assist the local public health nurses in recognizing the trachoma service as a part of their regular generalized health program; to assist them in carrying out good clinic procedures and in standardizing nursing techniques; to impress them with their responsibility to follow up the cases under treatment and bring their contacts in for examination; to keep complete records. She also encourages the development of educational programs in eye health in schools and other community groups.

The trachoma control program has been broadened now to include surgery for patients who receive this service through the Department of Public Welfare, which conducts field surgical clinics for this purpose. This imposes upon both the public health nurse and the trachoma field nurse the need for knowledge of policies of the Department of Public Welfare in regard to eligibility of the patients. It is also a part of their responsibility to assist in surgical clinics.

To sum up:

1. The public health nurse's services in a trachoma control program are essentially the same as in any other public health program for control of communicable disease.

2. Her knowledge and skill, developed as a result of a specialized service, challenge her to accept her responsibilities for rendering a broader and more complete service in every phase of her program.

"Pink Eye"*

Alson E. Braley, M.D.

THE author describes in layman's language the various types of eye infections which are generally known as "pink eye."

NEARLY all of us can remember the time we had "pink eye." We remember the frightening experience of awaking one morning and not being able to open our eyes. We cried for mother, who came to help us open them and to calm our fears. Mother would say, "Heavens, John, you have the 'pink eye.' Now all the other children will get it." Many of us did not visit a physician but were treated by mother with warm boric acid solution and perhaps some eye drops dad had bought in the drug store. We were out of school for about a week and, when we went back, the teacher wanted to make sure we would not give it to anyone. All our little friends wished they could have it so they could stay out of school a few days. If we were taken to a physician, we were told we had "pink eye" and were given some drops that made our eyes sting, but our eyes felt better and we were back in school a few days sooner. We did not realize the complexity of the situation at that time and many cases of "pink eye" developed complications.

Pneumococcus Eye Infections

Yes, "pink eye," in the technical sense of the phrase, is a simple disease. It is caused by small germs or bacteria that get into the delicate linings of the eye, causing an inflammation in the eye that is similar to the inflammation which occurs in simple sore throat. The term applied to the inflammation of the eyelids is called "conjunctivitis." During the spring, many children and adults develop acute conjunctivitis. Most of this is caused by a micro-organism

* Presented originally as a radio talk.

known as "pneumococcus." This is the same germ that causes pneumonia when it invades the lungs. This organism gives rise to an acute conjunctivitis with lots of pussy discharge. The eyes burn and smart and frequently there is a good deal of swelling of the upper lid. This type of conjunctivitis is quite contagious and may spread from one member of the family to another. A different type of acute conjunctivitis is produced by the influenza germ, which is frequently found also in cases of influenza. This type of conjunctivitis is usually not so severe as the pneumococcal conjunctivitis.

Koch-Weeks Eye Infection

A germ similar in some respects to the influenza germ was discovered by two world-renowned men, Dr. Koch, whom you will all remember as the man who first isolated the tuberculosis germ, and Dr. Weeks, a famous ophthalmologist, who worked here in New York City. These men found a micro-organism which caused the disease that physicians refer to as "pink eye." This organism is called the Koch-Weeks germ. Acute conjunctivitis is very contagious, recurring most often in spring and autumn. There is usually marked swelling, redness of the lids, and copious discharge. A Koch-Weeks germ infection of the conjunctiva spreads rapidly through the family and the school. Strict isolation technique must be carried out in order to prevent its spread. This consists of use of separate towels and wash-cloths, and care on the part of the infected person in handling articles belonging to others.

Staphylococcus Conjunctivitis

A type of acute conjunctivitis is produced by the staphylococcus. This micro-organism is the one that causes boils in the skin. It also causes styes and inflammation of the lid margins. This conjunctivitis is frequently associated with inflammation of the lid margins. It is often associated with inflammation of the lid border and has a tendency to recur unless the lids are also treated. Staphylococcic conjunctivitis is common the year around, probably because of a habit many of us have of rubbing our eyes with our dirty fingers. This carries the germs into the eyes and, when the germs are able to grow, an acute conjunctivitis is produced.

Streptococcus Eye Infection

The conjunctivitis produced by the streptococcus is usually quite severe. It may be associated with a sore throat or scarlet fever. The conjunctivitis is associated with marked pussy discharge and the development of a thick membrane on the surface of the conjunctiva. It may last a long time and requires vigorous treatment in order to prevent serious complications.

Epidemic Keratoconjunctivitis

At the present time a severe type of conjunctivitis has received a good deal of newspaper publicity. This conjunctivitis is called "California conjunctivitis," "shipyard conjunctivitis," or the more technical name of "epidemic keratoconjunctivitis." While most of the other types of acute conjunctivitis clear up in a week or ten days, this type lasts from three to four weeks and the blurring lasts much longer. It has been prevalent in many of the industrial plants on the Pacific coast and in the New York area. Many cases are also seen in New York City. Since this conjunctivitis has been so widely "glamorized," perhaps we should spend a little time discussing it. It frequently starts suddenly with a sensation of a foreign body in the eye. This is followed by swelling and marked burning and smarting of the eye. Often there is much pain. Nearly always there is a tender lump in front of the ear and the individual feels as if he is "coming down with the 'flu.'" There is rarely any pus coming from the eye, but the tears "run in a steady stream." The general symptoms last only a day or so, but the swelling and eye symptoms gradually increase in severity until about the fifth day, when the eye starts getting better. Then the blurring of vision begins. The eye is swollen and the blurring goes on for three weeks or so. During this time the eye looks nearly normal, but the blurring persists. This conjunctivitis is caused by a virus which was recently isolated by Dr. Murray Sanders, in New York City. While epidemic keratoconjunctivitis is a severe disease, the number of cases is inconspicuous as compared to acute conjunctivitis from other causes.

Conjunctivitis Caused by Filtrable Viruses

Since we have mentioned that this disease is caused by a filtrable virus, perhaps we should include a few other types of acute

conjunctivitis caused by viruses. As you all know, children with chicken-pox, measles, and three-day measles frequently have acute conjunctivitis. This conjunctivitis is produced by the same virus that causes the disease. Measles produces the most troublesome type, which usually requires treatment. The virus of measles causes the membrane of the lid to swell and become covered with little firm bumps called "follicles." These follicles may persist for quite a long time and frequently require treatment after the general disease has run its course.

Another interesting acute conjunctivitis caused by a virus is sometimes called "swimming-pool conjunctivitis" because many individuals contract the disease after going swimming in a pool. The methods by which the swimming pools become contaminated by the virus are rather involved and too lengthy to discuss now, but suffice it to say that as long as the water is chlorinated or constantly changing, the danger from the virus is slight. Nearly every year, however, we see a few cases of this disease.

Allergic "Pink Eye"

Most of us are familiar with hay fever and asthma and we know that these diseases are called "allergies." An allergic "pink eye" also occurs. This conjunctivitis is caused by a number of agents that may include food you eat, your fur coat, or perhaps the horse you ride. The itching is often intense. There are many other causes. Perhaps an allergic conjunctivitis due to oranges or tangerines may develop. The most frequent type, however, is a conjunctivitis that develops following use of mascara or other eye make-up. Hair dye is another important cause of allergic conjunctivitis. Edema of the lids and intense itching are the most outstanding symptoms. Many times it is very difficult to find the cause of an allergic conjunctivitis and the individual who has it frequently can suggest possible causes.

Prevention of Conjunctivitis

Before considering treatment, a few words concerning the prevention of conjunctivitis are in order. A very good rule to follow is "keep your hands away from your eyes." If you want to rub

your eyes or try to get something out of them, wash your hands with soap and water first. Our hands are always contaminated with many bacteria and, although the eye has a rather good resistance to help destroy these bacteria, many of them get into the eye, where they give rise to a conjunctivitis. If your eyes are normal, avoid washes and drops to keep the eyes clear. Nature has adequate means of keeping the eyes clear and bright. It is well to avoid used or dirty towels to wipe the eyes, since these are many times also contaminated.

Whenever people talk, sneeze, or cough they emit from their mouths thin bits of moisture called droplets. These droplet infections are important not only to the eyes but also the spread of upper respiratory infections. In crowded conditions it is difficult to avoid droplet infections, but one should try to avoid getting droplets into the eyes. If droplets do get into the eyes, frequent blinking may be of value in removing the infectious particles.

Treatment of Conjunctivitis

In considering the treatment of acute conjunctivitis, perhaps we should preface this part of the discussion by saying that your physician can give you valuable advice as to the best ways of handling your particular kind of conjunctivitis. He may prescribe the use of the sulfonamide drugs, for instance. These drugs have been of value in most of the bacterial types of conjunctivitis, but not in most of the virus forms, which require other types of therapy. While it is not possible to generalize on treatment of "pink eye," two home remedies are of value: these are a solution of boric acid and sterile white vaseline. A fresh, warm solution of boric acid used as an eyewash will remove much of the débris and crusts formed on the eyelids, and vaseline applied to the lids will prevent their sticking together and will soothe the inflamed membranes until more specific treatment from your physician can be obtained.

Iced compresses may add to the patient's comfort. Of course, ice should not be placed directly on the eyes, but cloths wrung out of ice water should be applied as compresses. They should be applied to the closed lids for 15 minutes to an hour, two or three times a day.

Summary

"Pink eye" is usually a simple disease, but may become quite serious. It occurs in adults as well as children and is caused by bacteria, viruses, or allergies. It is best to consult a physician whenever eyes become red and inflamed.

There are other causes for red and inflamed eyes than acute conjunctivitis. In an acute inflammation on the inside of the eye the eye may become very red. This simulates an acute conjunctivitis and requires vigorous treatment on the part of your physician.

The Vocational Training Program for the Visually Handicapped in the Minneapolis Public Schools

Kathern F. Gruber

THE author makes practical suggestions which have worked out in her community.

THE vocational training program for the visually handicapped in the Minneapolis public schools is called Applied Industries. It was initiated in 1935 under the inspirational leadership of Mr. George F. Meyer, then Supervisor of Sight-Saving and Braille Classes of the Minneapolis Public Schools. Prior to that time all visually handicapped pupils, upon graduation from high school or upon reaching the age of sixteen and no longer attending school, were clients of the State Department of Vocational Rehabilitation. They received their vocational adjustment through the Minneapolis representative of that Department.

Because of the lack of vocational opportunities suitable for the visually handicapped in the regular high schools, most of these pupils were graduated with a purely academic record. There was little or no available information concerning their vocational skills, interests, or aptitudes. It is needless to say that the majority of them became embarrassing responsibilities for the local rehabilitation office. It therefore became increasingly necessary for the sight-saving department to give consideration to vocational education.

Vocational training while the pupil was still in high school offered a possible solution to a very complex problem. Consequently a plan was worked out with the curriculum department of the Minneapolis public schools whereby 12th grade visually handicapped pupils might receive two vocational credits each semester for fifteen hours per week of supervised training in industry, such

credits to be applied toward high school graduation. A program was developed by which 12th grade pupils who chose applied industries as part of their last year of work in high school would be enrolled in an academic high school sight-saving class for half a day, and would be engaged in a supervised training program in industry the other half.

To implement this program, the sight-saving department selected one of its qualified high school teachers to serve as vocational co-ordinator for the applied industries pupils. It was agreed, however, that the State Department of Vocational Rehabilitation through its state vocational counselor for the visually handicapped would assume further vocational adjustment of these visually handicapped pupils if, after graduation from high school, their employment problems were still unsolved.

Selection of Applied Industries Candidates

Toward the close of each semester the sight-saving department makes special contact with all 11-A pupils enrolled in the sight-saving classes of the city to determine the placement of those who select higher education, those choosing applied industries and those dropping out of school at the age of sixteen. For those selecting applied industries a special day is set aside for conference with the consulting ophthalmologist. Present at this conference are the pupil, the director of special education, the state agent, the co-ordinator and, of course, the ophthalmologist. The ophthalmologist reviews the medical record of the pupil, giving detailed information regarding diagnosis and prognosis with references to visual acuity, depth perception, muscle balance, accommodation, fields of vision, and color vision, in their relation to industry. Pertinent questions of those present are answered by the ophthalmologist. If it seems desirable, a private conference is arranged between the pupil and the ophthalmologist so that the reasons for deleting any unwise undertakings may be discussed.

The consulting psychologist from the child study department next develops a guidance case study of the candidate. The director of special education places at her disposal the accumulated records of each pupil. The records consist of:

1. Complete, up-to-date ophthalmological record.

2. Complete, up-to-date physician's record. (Sight-saving class pupils are examined by a special school physician twice a school year.)
3. Family history record.
4. Attendance record.
5. Academic record.
6. Records of intelligence tests and achievement tests previously given.
7. Summary ratings on personality and adjustment of the pupil made by the sight-saving class teachers.
8. Notes on pupil's participation in extracurricular activities, school participation, etc.
9. Records of home visits made by the visiting teacher assigned to the department of special education.

The psychologist outlines a battery of tests to be given to each candidate. The tests for 1943 are as follows:

I. Intelligence Tests (one or more of these, depending on those given previously in the child's school career)—
   A. Stanford-Binet Intelligence Test.
   B. I.J.R. Intelligence Examination for the Visually Handicapped.
   C. Otis Self-Administering Test of Mental Ability—Higher Examination—Form B.

II. Stanford Achievement Tests.
   A. Reading Tests—
      1. Paragraph Meaning.
      2. Word Meaning.
      3. Language Usage.
      4. Dictation-Spelling.
   B. Arithmetic Tests—
      1. Arithmetic Reasoning.
      2. Arithmetic Computation.

III. Interest Inventories—
   A. Minneapolis Public Schools Interest Blank.
   B. Minnesota Mechanical Abilities Interest Analysis.
   C. Brainard Specific Interest Inventory—Form N1.
   D. Kuder Preference Record.

IV. Minnesota Manual Dexterity Test.

V. Cowan Adolescent Personality Schedule—Revision No. 2.

The Binet Test, the I.J.R. Test, the Dictation-Spelling, and the Minnesota Manual Dexterity Test are all administered by the consulting psychologist from the child study department with whom each applied industries candidate has a specified conference period. All the other tests are in Clear Type and are administered to the pupils by the respective sight-saving class teachers.

All tests are scored by the psychologist and the interpretations are recorded in the Guidance Case Study. When the psychologist has assembled and considered all records, a conference is called by the director of special education, at which the consulting psychologist gives each participant a copy of the summary she has developed and interprets her findings. At this conference tentative vocational plans are made for the pupil. The co-ordinator then assumes full responsibility for the program.

Duties of the Co-ordinator

The first duty of the co-ordinator is to present to the pupil the tentative training plans drawn up for his consideration. He then has the opportunity of making a choice of the one he would like to follow. The co-ordinator must then clear with the ophthalmologist in order to be sure that the vocation selected is a suitable one. The parent is next called upon to join the conference and the functioning of the plan chosen is explained. Emphasis is placed upon the seriousness of the obligation assumed by the pupil in entering upon the training program, and the obligation of the parent in maintaining home co-operation to implement the satisfactory fulfillment of such obligation. It is essential that the pupil and his parents understand and fully approve the training program selected.

In formulating plans, the co-ordinator must have in mind the following general policies governing the selection of training objectives as stated by the Minnesota Division of Rehabilitation in 1941:

> It is basic to the theory of rehabilitation in the competitive economy of today that the handicapped person should be guided to the selection of training for an occupation in which he will be able to do work of quality and amount equal to that of the average worker having no physical handicap.
>
> Training provided by the Division must in all cases have a definite vocational objective that can be attained within a reasonable time.

The training objective should be in harmony with the individual's abilities and physical condition. Sufficient evidence must be submitted to support the selection of the training objective.

The objective must be a legitimate, recognized occupation.

The objective must be one from which the client will not be barred by legal or other restrictions because of the type of his disability or inability to meet the established minimum requirements.

Training is most effective when it operates upon the principle of multipotentiality and versatility. That is, in the selection of training, the counselor should not overlook the advisability of preparing the individual so that he can adapt to many different jobs requiring similar skills.

It is required that the counselor, in selecting the type of training to be provided, will adhere to the principle of selecting such training as will prepare the client for employment in the shortest possible time and at the most economical cost consistent with adequate preparation.

Training that does not prepare specifically for a definite type of employment cannot be included.

Rather than establish arbitrary lengths of training periods for each employment objective, each training program should allow a period of sufficient length to provide adequate preparation for the employment objective selected. Long, drawn-out periods of training which defer entrance into remunerative employment should be avoided and discouraged. The counselor is expected to determine the length of the training period and to make recommendations accordingly.

The co-ordinator is responsible for the selection of co-operating agencies. She therefore canvasses the resources within the community, listing all possible firms, industries, etc., that may be called upon to co-operate. She confers with the president of the firm selected, outlines the objectives of the training program, and explains the functioning of it during the school year, emphasizing the following salient points:

Pupil to train three hours every school day, time of training to be adjusted to wishes of co-operating firm.

Pupil to receive two vocational credits for this training.

Pupil to receive no monetary remuneration.

Pupil not to replace a regular worker.

Co-ordinator to make weekly calls for supervisory purposes; to relieve co-operating agency of any serious difficulties that may arise during the training period; to clear any misunderstandings with respect to insurance rates (see Appendix I); to clear any misunderstandings with respect to the existence of a contract between the co-operating training agency and the trainee; to clear the case with the respective labor unions involved.

The co-ordinator is further responsible for checking the physical set-up of the plant for optimum working and lighting conditions.

After all such preliminary steps have been taken, the co-ordinator works with whatever personnel the president of the company assigns for the particular undertaking.

All of the preceding preparations are completed before the beginning of the 12th school year. If that occurs in mid-year, the co-ordinator has individual conferences with the pupil during the closing week of the 11A grade. If the semester begins in September, the co-ordinator holds such conference the week before school opens. This co-ordinator-trainee interview serves as the starting point for an entirely new type of work for the trainee; it gives the co-ordinator an opportunity to (1) review and stress the objectives of the course and the obligations of the trainee to the co-operating agency, to his own welfare and to the welfare of the entire group of the visually handicapped; (2) interpret the operation of the training program to the trainee; and (3) establish an acceptable time and place for necessary conferences during the training period.

After each program is launched and the pupil is reporting for supervised training for three hours every school day, the co-ordinator acts as liaison officer between the school and the co-operating agency. This work is extremely important and must be carried out with regularity. Usually the co-ordinator makes a call on the co-operating agency once a week and does all in her power to assure smooth functioning of the program. During such visits she obtains suggestions for possible improvement of individual programs; checks on validity of trainee's possible complaints; smooths out any difficulties in a businesslike manner; obtains report card marks for trainees, such marks to be arrived at with the co-operation of the immediate superior in charge of trainee.

The co-ordinator must also maintain the intelligent goodwill and co-operation of the agency by occasional courtesy calls on the executives or by dispatching letters. She must survey industries and firms not as yet co-operating with the program to discover possibilities for future co-operation and to lay the groundwork for such co-operation. At the close of the training period she must endeavor to place all Applied Industries candidates who have completed their training programs and who have satisfactorily demonstrated their ability to produce on a par with their normally sighted co-workers. Usually they are employed by the co-operating firm but, if not, the co-ordinator advises them concerning applications for work at similar firms or industries. If trainees are unable to obtain employment within three months after the completion of their training program, the co-ordinator presents the matter to the state agent and the case comes up for review by the State Department of Rehabilitation, whose clients they then become.

The co-ordinator co-operates with the state agent in the review of such cases and in the development of further vocational adjustment for them, and maintains follow-up work on all Applied Industries cases.

The co-ordinator makes periodic reports to all sight-saving class teachers with respect to the Applied Industries cases. In such reports it is helpful to point out those factors that made for distinct success in some instances and those that made for failure in others. This type of report (without use of names) gives the sight-saving class teacher concrete material to use with her respective grade group in developing the supplementary and necessary assets for successful vocational adjustment.

The Sight-Saving Class Teacher and an Effective Vocational Program

It is evident from the foregoing that the teachers of elementary and high school sight-saving classes have a definite responsibility for vocational guidance. It is not enough for a sight-saving class teacher to see that her pupils develop average attitudes, habits, and skills. The working world will not change to conform to the needs of a handicapped group; the teacher must be constantly on the alert to imbue each pupil with habits of eye care so that they

will become second nature to him; she must also place emphasis upon:

1. Punctuality in keeping all appointments.
2. Regularity in attendance. (This implies special reference to the maintenance of good health.)
3. Courtesy.
4. Moral maturity—carrying out assigned instructions; finishing a piece of work within a prescribed time; asking for no concessions; maintaining standard production in school work, etc.
5. Independence in coming to and from school. (One of the primary requisites in holding a job is the ability to go to and come from work alone.)
6. Responsiveness to the group—making contributions to the group; giving assistance to others; asking advice for himself; avoiding repetition of mistakes; being agreeable and pleasant to associates; identifying his own good with that of the group as a whole.

The teacher must select handwork of such a nature that the processes entailed are valuable and that the finished product justifies the time, labor, and materials involved. She must see that her pupils participate with the regular grades in cooking, housecrafts, elementary wood and metal work and gardening. She must give special consideration to typewriting as a tool that is a definite asset in many occupations. The co-ordination learned in the mastery of the typewriter is often a factor in maintaining hand and finger dexterity in other jobs.

Since physical poise is a tremendous vocational asset, it is imperative that the sight-saving class teacher encourage its development. Because participation of the visually handicapped in normal physical education programs is often limited because of eye conditions, the special teacher must help each pupil overcome any physical difficulties and develop poise to the optimum of his ability. To be able to speak and to listen well is an asset to anyone; to a visually handicapped person it may be the passport to employment.

Personality and grooming are often deciding factors in the selection of employees; the visually handicapped person cannot afford to add to his handicap by being slipshod in his personal appearance or his habits. The sight-saving class teacher must be frank with

her pupils in the discussion of these matters. Group and individual approach may be necessary. Each age group responds to different types of suggestions. By the time a pupil is ready for applied industries he should be thoroughly conscious of the vocational value of good grooming and his own ability to correct personal faults.

It is extremely desirable to have the visually handicapped pupil understand the effect of his own successes or failures on the employment of other members of the group. Whatever he does, good or bad, is quickly applied to all the visually handicapped. By his actions he can bring opprobrium or approval to the whole group.

Community Obligations

In the final analysis, a vocational program for the visually handicapped is definitely tied up with the larger problems of general employment, workmen's compensation, accident prevention, and social insurance. The public usually supports that which is indispensable, hence a conscious development of sound public opinion is of tremendous importance in the effective functioning of a vocational training program for the visually handicapped. All sight-saving class administrators, teachers, pupils, and parents of pupils have a community obligation to such development. General educators as well as PTA groups, community agencies, clubs, employer and employee groups, need to be informed of the problems and of their responsibility for solving them. The press, the radio, and moving pictures have a tremendous power to sway public opinion, hence care must be exercised that sensationalism be avoided and that a sound, practical viewpoint be expressed.

Acknowledgments

The author wishes to express appreciation to the following persons whose interest and continued support have made possible this vocational training program for the visually handicapped:

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M. Kathryn Morse, Visiting Teacher assigned to Special Education, Minneapolis Public Schools.

All sight-saving class teachers in the Minneapolis public schools.

APPENDIX I

Anti-Discrimination Act (Chapter 367, Laws of 1919)

An act making it unlawful to discriminate against handicapped persons through workmen's compensation insurance rates and providing a penalty.

Be it enacted by the Legislature of the State of Minnesota:

Section 1.—No person, partnership, association or corporation, or their agent or employees writing workmen's compensation insurance in this state, shall make or charge any rate which discriminates against the employment by the insured of any person who is physically handicapped by reason of loss or loss of use of any member due to accident or other cause.

Section 2.—Any person, partnership, association or corporation, or their agents or employees, offering a rate of compensation insurance forbidden by Section 1 of this act shall be guilty of a misdemeanor.

Section 3.—Whenever any company or its agents or employees shall have been convicted of a violation of this act, such fact shall be sufficient cause for the cancellation of its license by the commissioner of insurance.

Section 4.—This act shall take effect and be in force from and after its passage.

Approved April 23, 1919.

Liability for Second Injury (Chapter 43, Special Sessions Laws, 1935. Effective January 19, 1936).

Mason's Minnesota Statute 4276.—If an employee receives an injury which of itself would cause only permanent partial disability, but which, combined with a previous disability, does in fact cause permanent total disability, the employer shall only be liable for the permanent partial disability caused by the subsequent injury.

Provided, however, that in addition to compensation for such permanent partial disability and after the cessation of the payments of the prescribed period of weeks, the employee shall be paid by the state the remainder of the compensation that would be due for permanent total disability, out of a special fund known as the Special Compensation Fund . . . .

APPENDIX II.—GUIDANCE CASE STUDY

Examiner: Psychologist
Child Study Department
Minneapolis Public Schools

Subject: 9

Date: 4–18–39 Age: 18 Sex: F.

Revised Stanford-Binet, Form L: C.A. 18–3, M.A. 17–4, I.Q. 115. Rating, high average ability. Subject's rating on all items requiring abstract reasoning ability was exceptionally good. Memory and vocabulary development likewise seemed to be very good.

Stanford Achievement Test:	*Educ. Age*	*Equiv.*
Paragraph Meaning	16–10	
Word Meaning	15– 9	
Average Reading		16–5
Spelling-Dictation	15– 0	
Language Usage	17– 0	
Arithmetic Reasoning	17– 6	
Arithmetic Computation	15– 2	
Average Arithmetic		16–3
Average Achievement		16–5

Minnesota Manual Dexterity Test:

Hand rate of manipulation—Performance surpassing 75 per cent of the adult population.

Finger rate of manipulation—Performance surpassing 73 per cent of the adult population. These ratings are significantly high when one considers that no allowance was made for patient's visual difficulty.

Minnesota Aptitude Test for Clerical Workers: Patient's vision was found to be too deficient for the administration of this test to be continued.

Bernreuter Personality Inventory:

Self-confidence Scale.—20th %ile in self-confidence, indicating a marked aggressive tendency.

Sociability Scale.—38th %ile in sociability, indicating a tendency to prefer group activities to solitary pursuits.

On this test patient indicated that she likes to bear responsibilities and would rather work for herself than for a superior. She can stick to tiresome tasks for long periods and feels she can take criticism with good grace. Patient does not consider herself nervous or lacking in confidence. She enjoys social contact with other people, particularly with younger children.

Minneapolis Public School Interest Blank and *Minnesota Mechanical Abilities Interest Analysis:*

General Activity Preferences.—Patient enjoys taking care of young children. She likes cooking and helping about the home. She has had considerable experience in household activities. At the present time she is working for her room and board and her duties consume much of her time outside of the regular school day. She is a sociable girl and enjoys parties, and meeting new and interesting people. She is deeply interested in religion.

School Subject Preferences.—Patient enjoys academic work. English, mathematics, physiology, hygiene, typing, and physical training all appeal to her. No particular abilities or aptitudes are revealed by her preferences.

Reading Interests.—Although patient's reading is curtailed, she enjoys stories of home life and adventure, the Bible, and housekeeping books. She dislikes detective stories.

Three Wishes.—(1) I wish that I could be able to give my parents everything they sacrificed for me. (2) That I may be able to speak correctly. (3) That I may be one of the best in whatever I study or whatever work I do.

Occupational Preferences.—(1) Social service work; (2) caring for orphan children; (3) legal work.

Vocational Interests.—In addition to the above occupational choices patient is interested in playground direction and the work of a YWCA secretary.

Additional Information

Degree of Visual Defect.—Patient's eye difficulty has been diagnosed as myopia with high myopic astigmatism. Her most recent examination revealed vision of 6/15–2 and 6/15–3 in the right and left eyes respectively when glasses are used. Visual difficulty has not been under observation long enough to determine whether her case is progressive. However, her difficulty is serious and the ophthalmologist recommends that close eye work must be limited.

Family Situation.—Patient is the youngest of six children. Her father runs a large farm. Her mother is ill and the family has had a great deal of medical expense over a period of years. There is a good family background. The financial resources are somewhat limited.

School Grades.—Patient previously attended a convent school, and was much discouraged when forced to remain at home for two years because of her visual difficulty. During the past year and a half she has been attending high school; her academic record has been average or somewhat above average.

Health History.—Other than her visual difficulty, patient's health has been quite good. Teeth poor.

Interview.—Patient is an attractive girl with a clear complexion. She is neat, friendly, self-reliant, and well mannered. She has an amiable friendliness and readily adjusts to other people. She has a great deal of animation and sparkle, making her interesting to others; she in turn is interested in finding out as much as she can about those with whom she comes in contact. From the standpoint of physical appearance and easy sociability, she should have little difficulty in getting on with people and should be successful in jobs requiring social contacts.

Until very recently patient had planned to attend the university. Her aspirations are high and she seems to have a great deal of motivation for success. She recognizes that financial resources of her family are limited and would prefer to be personally responsible for the expense of further training. She has a close attachment to her family and is hopeful that she and her next older brother will be able to bring her parents to the city to live permanently. The fact that her mother is ill and that both of her parents are quite old makes it difficult for them to remain on the farm.

Ever since she was eight years of age patient has aspired to become a lawyer and this interest has waned only within the last few years. She now has quite a pronounced urge for personal service which appears to be bound up with her religious interest and desire to serve other people. The appeal that social service has for her consists in the opportunity it would give her to do things for others. Her fondness for younger children has led her to consider doing social service work for orphans.

Patient is now entering Applied Industries because she realizes that it would be better for her to become financially independent as soon as possible. She hopes eventually to get further educational training and may enter the university when she has accumulated some money.

Psychological Summary.—Patient is a very attractive girl with

high average intelligence (Stanford-Binet I.Q. 115) whose academic record has been at least average and who has good motivation for success. In personality she is sociable, friendly, and well liked. Her desire for personal service is intimately bound up with a religious and altruistic ideal.

Tentative Placement Plan.—Patient's desire to enter social service or some allied field of work should be definitely encouraged. Her appearance and her easy sociability should make for success in a job stressing personal relationships. It is possible that some of the courses in the Junior Nursing sequence would give her a good background in child care and training, home nursing, and nursery school work. Placement in some children's home or work as a nursery school assistant in a settlement house might be arranged.

Report of the Vocational Co-ordinator—Subject No. 9

The Vocational Training Plan submitted for Subject No. 9 was one of Junior Nurses' Training with the local Vocational High School as the co-operating agency. Subject attended two related-trade-information classes each week at the Vocational School and was assigned to actual duty at one of the Settlement Houses each afternoon. This schedule continued for half a year. Because of the subject's expressed interest in assisting other handicapped persons, the co-ordinator arranged for subject to work for half a year with the kindergarten teacher at the local school for crippled children.

Subject proved eminently satisfactory and was recommended for placement before the school year was over. Immediately upon graduation subject was employed in a fine home as governess to two pre-school children, which position she kept for a year. Her next position was as governess to a home-bound child. Subject accomplished her work in a superior manner. Lure of better wages has drawn her into defense work at the present time. However, she plans to continue her professional study in Junior Nursing as soon as she has the necessary time and money.

The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request.

When a Child "Fails" the School Vision Test*

In thousands of schools throughout the country, teachers give their pupils periodic vision tests to screen out the children who are less able than others to see to do their work. Of course, the tests are simple and not particularly discriminating, but they serve a very worth-while social purpose in detecting at least the more severely handicapped pupils. Some schools have on the staff an eye doctor who examines each child thoroughly at certain specified times, but in the many schools where this arrangement—undoubtedly the best—is not possible, various screening tests are used.

Probably the most familiar is the Snellen test, in which the child reads letters of different sizes from a card twenty feet away. In recent years this test has been shown to be inadequate† because it fails to detect some of the troublesome eye conditions which handicap school pupils. More discriminating tests have been devised by various persons, and their use is constantly growing more widespread as school authorities realize the importance of efficient seeing among pupils who are expected to carry on the work of the modern curriculum.

Among these tests are the Betts Visual Sensation and Perception Tests (Keystone View Company, Meadville, Pennsylvania); Eames Eye Test (World Book Company, Yonkers-on-Hudson, New York); Jensen Test of Color Blindness, Visual Acuity and Astigmatism (Psychological Corporation, New York City); Visual Fitness Test (E. P. Leonard, Jr., Newton, Massachusetts); and the Massachusetts

* Reprinted, with permission, from *The Elementary School Journal*, Vol. XLIII, No. 8, April, 1943.

† See reference list at the end of the article.

Vision Test (Division of Child Hygiene, Massachusetts Department of Public Health, Boston, Massachusetts).

Most teachers gladly co-operate in making the vision tests because they understand the importance of good sight to the academic future of the pupils, but some regard the program as an unnecessary task imposed on the already overworked teaching staff. It is, of course, trying to have to interrupt the teaching program, even briefly, especially when supervisors are setting a rapid pace; but it is also discouraging to try unsuccessfully for months to teach Joe to read or to do arithmetic, only to find at last that the letters, digits, words, sentences, and problems so painstakingly shown and explained to him have been seen only as shadowy or distorted marks on the page.

As long as their particular children "pass" the vision test, most parents either approve or are indifferent to the testing of the eyes at school. If, however, the familiar little slip comes home with its message that Margaret should be taken to the eye doctor, there is a prompt parental reaction. Intelligent parents usually appreciate the information and take the child to the eye specialist at once. Others find it impossible to believe that anything could be wrong with *their* child, and they resent the implication that there may be. Some become panicky about possible retributive consequences of not doing as the slip requests, especially if there is attached a section to be signed by the parent and returned to the school by the parent or doctor. Others, through sullenness or indifference, disregard the notice completely. Many of those who are rather irked by the notice eventually consult an oculist or optometrist and, when he finds the child's eyes in need of attention, come to appreciate the solicitude of the school.

When a child fails to "pass" the vision test, teachers and parents usually think of glasses as the probable result of a visit to the doctor. All are reasonably satisfied if the child returns to school with a pair of spectacles and proceeds to earn higher marks. Teachers and parents usually believe that, when glasses have been prescribed for a child, his vision is fully normal while he wears them, and they expect him to compete on equal terms with pupils who have no eye trouble. Many times he cannot do so because even the most skilfully fitted glasses will not raise his vision to normal, although they may improve it appreciably. When there is disease or deficiency in the tissues of the eye, glasses are not likely to help very much because they merely serve to put the eye in focus and cannot affect its sensitivity.

Many children with eye trouble do not need glasses. They may need rest, medical treatment, or or-

thoptic exercises. Teachers hear a lot about eye exercises and may be misled by overenthusiastic reports of their efficacy. Briefly, there are two types of such exercises, which may be termed "legitimate" and "illegitimate."

Legitimate exercises, or those of proved worth, are usually directed toward teaching the eyes to see more discriminatingly, teaching the eyes to work together, or teaching the mind to combine into one picture the two single pictures sent back to it—one from each eye. Such exercises are employed by reputable eye physicians and optometrists.

Illegitimate eye exercises are those of the "throw-away-your-glasses" type. They are usually fantastic, have catchy names, and are based on half-truths and an incomplete understanding of the facts of physiology and psychology. Often they may afford immediate temporary improvement in vision regardless of the train of unfavorable consequences which results from the muscular spasm, photochemical depletion, and other undesirable physical changes which they set up. Some of the exercises are dramatizations of simple little involuntary acts which the eyes perform anyway without study of a series of "lessons." No conscientious oculist or optometrist wishes to put glasses on any patient; he will use every means in his power to avoid doing so if any such possibility exists. Neither will he inconvenience his patient with exercises unless there is some likelihood that they will benefit the condition for which treatment is sought.

Sometimes a child who has "failed" the school vision test returns to the teacher with a brief statement from the doctor that glasses are not needed. The teacher wonders why. Sometimes the reason is that the school test was made during a study period or immediately after the pupil had been doing very close book or desk work. In some such cases, especially if the pupil is inclined to be nervous or tense, the focusing muscles in the eye will not fully relax and the child will be artificially nearsighted for a few minutes or perhaps half an hour or longer. Such a child will be likely to "fail" the vision test but may have relaxed more fully by the time he sees the doctor. Other children have insensitive eyes, the part that sees being like the old, slow camera film as compared with the newer speed films. In such cases glasses may be of no value, and the doctor may think it best to approach the problem of treatment in a different way. Sometimes there are blind spots in the eyes. Part of the eye will be able to see while the remaining part may not. This condition, again, is not helped by glasses, and in such a case the child will return from the doctor without them. Misunderstandings are bound to occur when busy teachers and busy doctors do not take time to

explain fully or to confer when questions arise. Most doctors are glad to explain such matters to teachers.

When a child has low vision which is only partially improved by glasses or which cannot be improved at all, the teacher should not expect the pupil to compete with normally seeing children. He should be given a seat in a good light, be given frequent rest periods, be permitted to look out of the window whenever he wants to (because looking out of the window rests the focusing muscles), and be provided with textbooks having large, boldface type. He should be allowed to use a heavy, soft pencil, and to write script large enough for him to see clearly. If vision is markedly low, placement in a sight-saving class should be considered.

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More About Eye Exercises*

Pascal's proposal (*American Journal of Ophthalmology*, 1943, volume 26, June, page 636) that the "Bates system" should be made the subject of research by a university eye clinic is not very likely to meet with general approval, and will perhaps be scorned by many ophthalmologists. Pascal, we note, recommends that Huxley's book on the "Art of seeing" "be taken more seriously by ophthalmologists than it apparently is"; because, although "a great deal of the 'science' in Mr. Huxley's book is pseudoscience," yet there may be "some points in the Bates system which are sound and which can be used with advantage, . . . as an adjuvant to the correction of refractive errors."

A personal letter from another colleague suggests that to call the method under discussion "unscientific and absurd, which to be sure it

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is, is perhaps too negative an approach," and that "a more positive approach would be to recognize what modicum of truth there may be in the claims"; further that it would be "sounder to assume that there is nothing the Bates school knows which we ophthalmologists do not know and apply when the situation requires it."

The same correspondent reaches the general conclusion that "there is nothing to investigate in the Bates method, but we can afford to be less harsh and more benevolent in our reaction to it, and treat the clients of it with more sympathy and understanding of their problems."

It has been hinted that the subject will be discussed before at least one of our national societies and also before an important local organization. It may therefore be well to consider on the one hand what circumstances have favored the Bates movement and have promoted its popularity among certain members of the community; and on the other hand what "modicum of truth there may be in the claims" made by Bates and his successors.

The attempt to escape the use of spectacle lenses, in cases where ophthalmologists are disposed to recommend them, is sometimes merely an aesthetic or psychologic manifestation. The individual, regardless of other considerations, is willing to do almost anything to avoid what he regards as the disfigurement and the annoyance of having to wear these "crutches," as Aldous Huxley likes to call them. This group of individuals does not need to concern us greatly. "He that complies against his will is of his own opinion still."

Huxley himself belongs to another group, small but relatively important—those who, as the result of serious ocular disease (such as Huxley's adolescent keratitis punctata) can never hope to obtain perfect vision, even by the aid of correcting lenses. Some of these sufferers wander, as Huxley seems to have wandered, from one eye expert to another, vainly hoping for good sight, and at times, no doubt, losing rather than gaining by the effort of the ophthalmologist to find satisfactory correcting lenses.

A third group, intermediate in numbers and significance, yet sufficiently important during the war emergency, consists of those candidates for special classification in the Army, the Navy, the Marines, or the air services who are disqualified on account of refractive or muscle errors, and who insist on finding some means, other than spectacle lenses, which will enable them to qualify.

Numerically very much the most important class is that of the patients who need correcting lenses but have never succeeded in finding the proper refractive measurement, the proper muscular adjustment, or the correction for an unrecognized

aniseikonia, or the necessary combination of all three.

For driving this last group into the hands of the Bates school the responsibility lies with ophthalmologists and optometrists—more frequently no doubt with the latter than with the former, yet all too frequently with the ophthalmologist.

How often we see patients who have apparently struggled year after year, from one optometrist to another and then to an ophthalmologist, or from ophthalmologist to ophthalmologist, or occasionally from ophthalmologist to optometrist, wearing prescription after prescription with which they were never comfortable, and who yet were in the last analysis capable of proper correction. In desperation, and grasping at the proverbial last straw, some of these patients pass into the hands of the Bates practitioner, honest or dishonest.

Every overcorrected myope, every myope whose two eyes are not properly balanced, or who has an inaccurately measured astigmatic error, is a potential candidate for the Bates system. The same is true of many uncorrected hyperopes, especially if subjected to the annoyance of poor balance or astigmatic imperfections; and it is of course equally true of the patient in whom astigmatism is the chief source of trouble but who has never received the right strength and axis of cylinder for each eye.

The existence of the Bates school may be blamed in large part on chaos and neglect in the teaching and practice of refraction; and the most important remedy for the activities of the Bates school is to be had from systematic improvement in refractive technique. Nor should it be forgotten that an important part of refractive technique lies in the proper adjustment of frame and lenses, and that a good refractive diagnosis may be spoiled, so far as the result to the patient is concerned, by neglect as to centering and angling of the lenses or as to their distance from the eyes.

If the patient, through imperfect work, has failed to obtain comfort with his glasses, he may the more easily be persuaded that glasses are harmful and that he can be made more comfortable without them.

The candidate for war service, having a very practical reason for demonstrating ability to satisfy certain visual standards without glasses, is often a particularly easy victim of the most unscrupulous type of Bates practitioner. It is difficult to accumulate a body of substantial evidence as to what is going on with regard to these charlatans, but from time to time one hears of cases in which the applicant, after the use of "exercises," has gained a line or two on the Snellen chart and so has been able to pass an examination for the Navy or the flying forces.

It must be remembered that varying efficiency of illumination in dif-

ferent recruiting offices could play an important part as to conflicting results in successive examinations of the same candidate. But it is probable that even more important is the instruction of the applicant, by his Bates practitioner, in certain special maneuvers with which the applicant may learn to struggle a line or two further down the chart. Such tricks are not altogether honest, but the applicant does not necessarily realize the harm that might result from what is virtually a misrepresentation.

It was to be expected, and has actually occurred, that the improved vision thus shown would break down under pressure of active service. Visual standards in the armed forces are based upon considerations of safety and efficiency. The aviator who has a disturbing amount of hyperopia, or an important astigmatic error, or even a low myopia, may be able to improve his visual record under favorable physical conditions, or by certain efforts with the orbicularis and elevator muscles of the lids. But, in the presence of fatigue or difficult flying conditions, his basic visual defect may render him a source of danger not only to himself but to his comrades, to say nothing of the risk to valuable fighting machinery. Hence, what appeared to be gain is really loss, and what appeared a triumph for the Bates method may come dangerously near being rank treachery. Yet we are told that various Bates practitioners (chiefly among the less creditable group of optometrists) are regularly selling such "services" for substantial monetary considerations. It is as to this kind of trickery, in relation to the war emergency, that the most valuable results are likely to be obtained from well-organized research into the achievements of the Bates method. The "modicum of truth" concerning the "Bates system" will inevitably be found to include this sort of trickery. Such further results as it obtains depend, not upon any elements of truth in the physical claims of the school, but upon a combination of autosuggestion with certain universally recognized but less generally practiced principles of rest and relaxation.

In spite of the fanciful language in which they are often clothed, the so-called Bates exercises act chiefly to rest the eyes and to induce conditions of mental relaxation. The importance of the relationship between relaxation and activity is perhaps too frequently overlooked by physicians, including some ophthalmologists. Yet in writing on this theme, as well as in various other details, Huxley is guilty of several rather reckless misstatements. He says, for example: "Adequate cognition of the external world depends upon movement. . . . And yet for some inexplicable reason, orthodox ophthalmologists have never paid the smallest attention to it. The first person to devote any serious thought to this manifestly important problem was Dr. W. H. Bates."

He says elsewhere: "Orthodox ophthalmologists are content to palliate the symptoms of poor sight by means of those valuable crutches, artificial lenses. They work only on the sensing eye and ignore completely the selecting, perceiving, and seeing mind."

Many ophthalmologists expend a good deal of energy in warning patients to avoid excessive continuity of effort and to aim at bodily and mental relaxation, even during the performance of work. Much of Huxley's book is devoted to this very topic, and some of the most laughable forms of eye exercises recommended by Huxley and his teachers are simply systematic means of attaining relaxation. Good examples of this are to be found in Huxley's chapters on "palming," on "blinking," on "breathing," and on "swinging"; as well as in the general chapter on "relaxation."

Perhaps no better example of this pursuit of mental relaxation could be had than Huxley's description of "nose writing." (See quotation on this subject in the previous editorial, *American Journal of Ophthalmology*, February, page 200.) Readers will remember Huxley's dictum that "A little nose-writing, followed by a few minutes of palming, will do wonders in relieving the fatigue of a strained mind and staring eyes, and will result in a perceptible temporary improvement of defective vision. This temporary improvement will become permanent, as the normal and natural functioning fostered by nose-writing and the other procedures described in this book becomes habitual and automatic."

Huxley insists repeatedly on the fact, which might at first appear a trifle paradoxical, that relaxation is often best attained actively, under concentration, rather than passively and during a period in which the subject seeks to banish all definite thought from his mind. We are told to "work hard but never under tension," to "avoid being bored or boring others."

Not many of us would quarrel with the statement that "inhibition of the movement of the eyes . . . is brought about by too great a desire to see." The fatigue and strain that come from stagnancy in effort of any part of the body are familiar to us all.

Bates at first taught his clients to imagine black while palming (cupping the hand over the eye). But he later advised "remembering pleasant scenes and incidents out of (the patient's) own personal history." Huxley naïvely comments on the "refreshment in the temporary exclusion of light, and comfort in the warmth of the hands." He also advises that "where circumstances make it difficult or embarrassing to assume an attitude of palming, it is possible to obtain a certain measure of relaxation by palming mentally —that is, by closing the eyes, imagining that they are covered with

the hands and remembering some pleasant scene or episode." Many of our own very loyal patients, hard pressed at business or at recreational reading, have probably complied with Huxley's recommendation of "gentle rubbing of the temples . . . often . . . soothing and refreshing"; or would even agree that "eye fatigue may also be relieved by rubbing and kneading the muscles of the upper part of the nape of the neck."

It is not necessary to condemn any of a group of innocent pastimes recommended by Huxley and others. More or less, they are a part of common human experience. Thus Huxley advises juggling two bowls from hand to hand, or combining rapid fixation with the exercise of memory in the form of simple games with dice or dominoes.

But we are bound to disagree with Huxley and his predecessors, and sometimes to laugh at them, when, in treating of astigmatism, they indulge in such claims as that "spectacles tend to fix the cornea in that particular condition of distortion present at the moment of the oculist's examination. . . . But if the astigmatic person will discard his artificial lenses, learn the art of passive and dynamic relaxation, . . . he can do much to diminish, or even altogether eliminate his disability."

Duke-Elder well says (*British Medical Journal*, 1943, May 22, page 635): "Whatever be the value of the exercises, it is quite unintelligent of Huxley to have confused their advocacy with so many misstatements regarding known scientific facts. . . . The most stupid feature about his book, however, is that he insists throughout on the physiological mechanism whereby these exercises are supposed to work. It would at least have been logical if he had continued to allow the reader to assume that he was speaking in ignorance of anything except results. . . . For the simple neurote who has abundance of time to play with, Huxley's antics of palming, shifting, flashing, and the rest are probably as good treatment as any other system of Yogi or Coué-ism. To these the book may be of value. It is hardly possible that it will impress anyone endowed with common sense and a critical faculty. It may be dangerous in the hands of the impressionable who happen to suffer from glaucoma or detachment of the retina, and undoubtedly will be dangerous in the hands of the anxious parent of a myopic child. . . . But the greatest value of the book will be to the psychiatrist as an intimate and revealing self-study in psychology."

—W. H. Crisp, M.D.
Denver, Colorado.

Apropos of College Lighting

Editor's Note.—The correspondence which is published herewith between Dr. Winifred Ingersoll and

W. G. Darley of the Nela Park Engineering Department, General Electric Company, concerns the article by Dr. Ingersoll, entitled "Visual Acuity of College Students in Rocky Mountain State," which appeared in the Spring issue of the REVIEW.

Dear Dr. Ingersoll:

There is one point in your paper on the visual acuity of college students drawn from the Rocky Mountain area (SIGHT-SAVING REVIEW, Spring 1943, Page 53) which I would like to discuss. It is stated therein that "the causes usually given for near sightedness, thus, are inadequate to explain its prevalence among these students." This conclusion is based in part upon the thought that two-thirds of the 437 students questioned had always used electric light, i. e., always had good lighting, while one-third had used oil lamps, i. e., poor lighting.

While there is no question but that the *potentiality* for better artificial lighting exists in wired homes in much greater degree than in unwired homes, the fact remains that in relatively few instances has the maximum advantage been taken of this potentiality. The result is, I feel sure, that a meticulous investigation would reveal that lighting conditions in some of the wired homes are actually less satisfactory than in unwired homes where maximum advantage is taken of other than electric light sources.

In other words, it is not entirely safe to infer that all students from oil-lamp-lighted homes did homework under less favorable seeing conditions than students from wired homes, though on the average, it would be reasonable to expect this to hold. On the other hand, my knowledge of the lighting arrangements for study purposes in the average home in this vicinity leads to the conclusion that while in general better artificial lighting will be provided in the wired home than in the unwired home, such lighting will as a rule leave very much to be desired from the standpoint of the requirements of the visual tasks and of good lighting practice for ease of seeing.

The data which you have presented in the paper are most interesting. I am wondering if similar information is available on graduating students. The information presented by Ruth E. Boynton on the Minnesota students carried an analysis for both entering and graduating students, and it appeared to me that the case she presented was quite significant.

Very truly yours,

W. G. DARLEY

My dear Mr. Darley:

Thank you for your letter of June 26 with your interesting discussion of the paper. . . . Of the seven causes for low visual acuity mentioned, you question whether

enough importance has been attached to lighting, and it is quite possible that you are right. Much more study of that factor is needed before coming to a definite conclusion. I believe that lighting is somewhat poorer in Wyoming than in most areas. You state that electric lights are not often at maximum efficiency. Would not the same tendency to use inefficient electric lights exist wherever electricity is used, and would not any type of lighting system be below maximum efficiency in the average home? While it might be difficult to prove, I believe from observation that Wyoming students use lights less than most groups, which would in part at least offset the poorer lighting. That is one reason why I would search for other factors. Many freshman students gave 9 P.M. as their retiring hour, and movies are available only to those living in the larger towns.

I suppose there may be many things which are contributing in some degree to low visual acuity among these students. I cannot help thinking that there may be something of importance which is peculiar to this locality, such as altitude or some dietary deficiency. It will take more investigation to be sure. I appreciate very much your helpful criticism.

Very truly yours,

WINIFRED INGERSOLL, M.D.

Dear Dr. Ingersoll:

You are quite right in stating that the tendency to use inefficient electric lights exists wherever electricity is used, and that any type of lighting system is below maximum efficiency in the average home. In my letter of the 26th, my only thought was that conditions in Wyoming would not be very different from those in this vicinity, and that in this vicinity, artificial lighting, as a rule, leaves very much to be desired from the standpoint of the requirements of the visual tasks and of good lighting practice for ease of seeing.

Considering how poor home study and school classroom conditions are, generally, throughout the country, I would be somewhat surprised if those in Wyoming would be very far out of line. As a matter of fact, whether a student depends upon natural lighting or upon artificial lighting for his or her indoor study, the answer will be about the same unless the student has been educated to take maximum advantage of the available illumination. Thus, day-lighting even on bright days leaves much to be desired in the average classroom, particularly for those students seated at the inner row of desks. Of course, when it is necessary to pull the shades down, and on dark days, practically all individuals in the room are handicapped with a lighting deficiency.

Probably the best way to check

on this matter is to obtain an instrument which will measure illumination, such as a light meter, and actually measure the illumination at the work point in a number of homes and classrooms. While it is true that the quantity of light on the work plane bears no relation to the quality of the lighting (that is, freedom from direct and reflected glare, shadows, etc.), it is also a matter of fact that human beings are very poor light meters insofar as determining the quantity of light is concerned. On the other hand, with a little practice, one can soon learn to analyze whether or not a particular seeing condition is comfortable or not. . . .

Very truly yours,

W. G. DARLEY

Note and Comment

Dr. Lancaster to Receive Leslie Dana Gold Medal.—The Leslie Dana Gold Medal, awarded annually for outstanding achievements in the prevention of blindness and the conservation of vision, will be presented this year to Dr. Walter B. Lancaster of Boston—a member of the Society's Board of Directors.

Dr. Lancaster was named for this honor by the St. Louis Society for the Blind, through which the medal is offered by Mr. Leslie Dana of St. Louis. This highly prized token of recognition in the field of public health is given upon the recommendation of the Association for Research in Ophthalmology.

Despite his 80 years, Dr. Lancaster is in active practice as an ophthalmologist. He is consulting ophthalmic surgeon at Boston City Hospital, Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital. He was formerly chief-of-staff of the Dartmouth Eye Institute, and since 1936 has served as lecturer in ophthalmology in the Harvard Graduate Medical School. He has served as president of the American Ophthalmological Society, American Academy of Ophthalmology and Otolaryngology and the New England Ophthalmological Society; chairman of the Section on Ophthalmology of the American Medical Association; and an officer or member of numerous other scientific groups.

The conditions of the Leslie Dana Medal award set forth that it is to be made for "long meritorious service in the conservation of vision in the prevention and cure of diseases dangerous to eyesight; research and instruction in ophthalmology and allied subjects; social service for the control of eye diseases; and special discoveries in the domain of general science or medicine of exceptional importance in conservation of vision."

Subcommittee to Investigate Keratoconjunctivitis.—The Joint Committee on Industrial Ophthalmology, through its chairman, Dr. A. C. Snell, has appointed a Subcommittee to investigate epidemic keratoconjunctivitis in the Chicago area. New cases are appearing continuously, indicating that a controlled study might be valuable. The members of this Committee are:

Dr. Thomas Allen, Chicago—Member Joint Committee.
Dr. Harry Gradle, Chicago—University of Illinois Medical School.
Dr. Sanford Gifford, Chicago—Northwestern University Medical School.
Dr. Glen Harrison, Waukegan, Ill.—Beasley Clinic.
Dr. H. Woodruff, Joliet, Ill.—Consultant Kankakee Ordnance Plant.
Dr. Hedwig S. Kuhn, Hammond, Ind.—Secretary and Member Joint Committee.
Dr. Edward A. Piszczek, Chicago—Epidemiologist, Cook County Health Unit.
Dr. H. J. Shaughnessy, Chicago—Chief, Division of Laboratories, Illinois State Health Department.
Dr. S. O. Levinson, Chicago—Serologist, Director of the Deutsch Serum Institute of Michael Reese Hospital.

This announcement is being sent to ophthalmologists and medical directors of industry in Cook County, Illinois and Lake County, Indiana, as a renewed warning that epidemic keratoconjunctivitis is still present and that any slackening of constant vigilance might result in an epidemic. The Committee is more than glad, at any time, to assist physicians, industry and public health officials in any way possible, and would appreciate being advised of new cases.

Study of Problems of Children With Severe Visual Handicaps.—This new joint project of the American Foundation for the Blind and the National Society for the Prevention of Blindness has as its objectives: (1) a study of the partially seeing and the partially blind child of school age to determine his unmet needs in the areas of eye care and educational and vocational adjustment, and (2) a survey of the community resources which could be adapted to meet those needs. Dr. Berthold Lowenfeld, of the Foundation, and Miss C. Edith Kerby, of the Society, who have initiated sample studies of this type in the states of Maryland and Florida, report a genuine interest and desire to co-operate, manifested by all agencies concerned.

Knapp Memorial Laboratories Organized.—We are pleased to hear that Dr. LeGrand Hardy has assumed the directorship of a new set of laboratories designed for the study of ocular functions, including physiologic optics, which has been constructed and is now in operation at the Institute of Ophthalmology of the Presbyterian

Hospital, Columbia-Presbyterian Medical Center, New York. The laboratories are being equipped and maintained by the Knapp Memorial Foundation, governed by Dr. Arnold Knapp, Dean Willard C. Rappleye and Dr. Phillips Thygeson. Dr. Gertrude Rand has been appointed research associate for the study of optics and visual physiology. Both Dr. Hardy and Dr. Rand are members of the Advisory Committee of the National Society for the Prevention of Blindness.

How Color-Blind Men are Admitted to Navy and Army Air Forces.—Discussing a technic which it is claimed will educate men who are color blind so that they can pass the armed forces' tests for color blindness, *The Journal of the American Medical Association* for June 5 says: "Obviously, it is for the services themselves to determine whether or not the tests for color blindness now used are sufficient, in view of the possibilities of learning, to screen out enough persons who are color deficient or whether or not the young man who is willing to put in the necessary time in an educational process to learn enough about the tests to enable him to pass them would not qualify because of superior learning ability or intelligence to meet the needs of the armed forces. . . .

"In *The Journal* for March 20 reference was made to an alleged cure for color blindness said to have been devised by one J. H. Lepper, optometrist, of Mason City, Iowa. Subsequent to the publication of that statement, Lepper sent to *The Journal* a communication in which he insisted that he does control color blindness in from fifteen to twenty days so that boys who followed his methods passed government tests. He submitted complete instructions as to the technic that he uses, some special lenses which are used as a part of the procedure, and a list of men now in the Navy and in the Air Force who had previously been rejected but were accepted after having followed his technic.

"The material concerned was referred to appropriate agencies in Washington, which verified the information supplied by Lepper as to the men who had been rejected and later accepted following his attention. Investigators then visited certain optometrists in the eastern part of the United States who follow the Lepper technic and studied their results. These investigators believe that Lepper is conducting an educational rather than a therapeutic process. In his technic the subjects are instructed to get some one with normal color vision to assist them and to trace the shapes of the figures carefully even in those charts in which they can see the figures

fairly well. They are instructed to continue working on harder and harder charts and to keep daily records of the charts which they can read and those which they cannot read. Thus the person concerned builds a learning curve and with sufficient time masters the color manual thoroughly.

"It seems quite likely that those with disturbances of color vision do fix in their minds appearances which are associated with certain colors when viewing objects that have for them some familiarity. No doubt re-examination of these individuals at a later date, using a different technic, would reveal that the persons concerned are still color deficient, although they did learn enough about the test ordinarily used to pass that test and thus enable them to enter military service. . . .

"The optometrists who are now specializing in the Lepper technic might limit their promotion of the method to the statement that they teach men to pass the tests for color vision and avoid carefully the use of the word 'cure' in any relation to color blindness."

Education and Health of the Partially Seeing Child.—Under this title, a volume by Winifred Hathaway, the Society's associate director, is being published by Columbia University Press. The book presents in simple and direct language the ways of providing education and health services for partially seeing children in rural as well as in urban areas, and discusses possible solutions for many of the problems that arise. It will be of value not only to in-service teachers and to those preparing to teach, but to superintendents of schools, supervisors, physicians and nurses in the school health service, and welfare and other social workers. It should be on the "must" list of all colleges and universities for the preparation of teachers. The Columbia University Press plans to have the book available for distribution at $2.50 on or about October 30.

Report Effective Use of New Solution for Epidemic Eye Disease.—Effective use of a solution of sodium sulfathiazole containing desoxyephedrine in the treatment of epidemic keratoconjunctivitis, the new eye disease, is reported in *The Journal of the American Medical Association* for July 10 by H. S. Gradle, M.D., Chicago, and G. H. Harrison, M.D., Waukegan, Ill.

"Epidemic keratoconjunctivitis," the two men say, "has taken an enormous toll of man-hours during the past year, for the average loss of working time incurred in each case is from fourteen to

eighteen days. Consequently any measure that can reduce such wastage is worth trying, even though it may not be uniformly successful. On that basis we are reporting the use of a new therapeutic measure that in our hands has proved worth while. It is realized that the number of cases is small, that the results are only those of clinical observation and that the accurate serologic proof is missing."

The authors say that the new medication is harmless to the tissues of the eye, and reduces the time of the acute aspect of the disease to three to seven days. The solution is used as eye drops. In the 50 cases reported by them treatment was continued for several weeks after the acute phase had subsided.

U. S. Public Health Service Co-operates in Industrial Program.—Readers of the REVIEW will be glad to know that Dr. Joseph Lo Presti, Assistant Surgeon, United States Public Health Service Reserve, has been assigned to assist the National Society for the Prevention of Blindness in carrying on a program in the field of industrial eye hygiene. The Society will act as a clearing house of information for the various governmental and voluntary agencies whose interests include protection of eyesight and conservation of vision in industry.

The addition of Dr. Lo Presti to its staff will enable the Society to develop more thoroughly its activities in the field of industrial eye hygiene which are so vital now because of increased industrial production. It will be able to co-operate even more extensively than in the past with the medical profession, and particularly with industrial physicians and industrial hygiene directors.

A native of Lawrence, Mass., Dr. Lo Presti is a graduate of Harvard University, and he received his medical degree from the New York University College of Medicine. After serving an interneship at Montefiore Hospital in New York City, he did postgraduate work in ophthalmology at Long Island College Hospital.

Limited Service for Men With Physical Defects.—A military opportunity for men with physical defects that in previous wars would have barred them from serving their country in the armed forces has been provided in this war through limited service, Will O'Neil, Chicago, explains in a recent issue of *Hygeia*.

"Last year the Army began taking men with physical defects

that render them unfit for service in the combat branches," he says. "They have released thousands of more able-bodied men for the shooting work of the Army, and their contributions to the success of the Army are by no means limited to kitchen service. Although not classified as combat troops, many of them are going across the seas with their outfits to serve in areas where the action is hottest. Others are remaining behind in jobs at posts and camps throughout the nation.

"Instead of the 13 weeks of rugged basic training given general service men immediately after their induction into uniform, the limited service men are given a month's condensed but intensive introduction to the Army." Mr. O'Neil explains that the operations officer at Camp McCoy, Major William Lutz Krigbaum, is in charge of the Limited Service School, and that in its first month of operation it handled less than 200 men, but now it receives and discharges 1,000 men a week, each of the graduates having been given a carefully planned, twenty-eight-day program of training that fits him for immediate duty.

"About 65 per cent of the men going through the school were rejected for general military service because of poor eyesight," Mr. O'Neil continues. "They have from one-tenth to one-twentieth of normal vision, or they have vision in only one eye. The great number of men wearing glasses is one of the noticeable features of the troops in the camp."

Sixteen per cent of all the men who have physical defects other than those of the eyes have been "reclaimed" for general military service, but only a small number of men with eye defects can be reclassified for general service by the school's doctors. Although the combat branches are closed to the limited service men, they are sent into all of the noncombat branches.

Nutrition Survey Discloses Eye Conditions Among Aircraft Workers.—A high incidence of ocular discomfort in a group of young, presumably healthy men, was found as a result of a nutrition survey among workers in an aircraft industry in Southern California. The survey, reported at length in the April, Milbank Memorial Fund *Quarterly*, was conducted among a large, selected group of men, most of whom were under 30 years of age. Clinica

and laboratory studies for the purpose of disclosing possible vitamin deficiencies revealed thickening, opacity, or localized elevation of the conjunctiva in nearly every subject, evidence of vitamin A deficiency (past or present). Some degree of corneal vascularization was found in every subject, and 35 per cent complained of ocular symptoms commonly found in cases of riboflavin deficiency.

Plans Made to Care for Blinded Members of Armed Forces.—Plans already have been made for the handling of members of the armed forces who are blinded in this war, *The Journal of the American Medical Association* pointed out recently. *The Journal* says:

"Among the casualties of war few merit more immediate consideration than that given to those who become sightless as a result of their participation in the national defense. In World War I, according to available figures, less than 250 Americans were blinded. Thus far the number of British soldiers who have become sightless, including the men from Great Britain and the colonies, is somewhat less than a few hundred. Planning bodies, therefore, estimate that the number of Americans in the armed forces who become totally blind will not exceed a few hundred. For the past six months representatives of the Surgeons General of the Army, the Navy, the Public Health Service, the administrator of the Veterans Administration, the Federal Board of Hospitalization and the ophthalmologic committee of the Division of Medical Sciences of the National Research Council have been engaged in a study of the problem. An elaborate program has been developed to rehabilitate socially and economically those who become sightless. Sufficient funds have been provided by the Congress to meet every possible need. The plans contemplate utilization of existing agencies which deal with the blind. However, public fund-raising campaigns are unnecessary since the over-all need is hardly sufficient to demand special expansion for this purpose in the services of unofficial agencies. In accordance with the executive order of the President, the social rehabilitation of the blind becomes a function of the Veterans Administration and is to be handled by the Division of Educational Rehabilitation and not the medical division. Through the cooperative effort now in process of development the rehabilitation will begin just as soon as the diagnosis is made and will continue from the time of reception of the invalid by the armed forces until the man can be discharged from the Veterans Administration physically, mentally and socially rehabilitated."

Current Articles of Interest

Rôle of the Medical Social Worker in an Ophthalmologic Service, Mabel Lee Price, *Archives of Ophthalmology*, February, 1943, published monthly by the American Medical Association, 535 North Dearborn St., Chicago, Illinois.

In a study of 599 patients in the ophthalmologic clinic of the Hospital of the University of Pennsylvania, almost one-half were found not to have profited fully from the services offered by the clinic. The reasons for failure to complete treatment are not evident from the medical charts. Only two per cent of the group studied actually refused the medical recommendations, but 48 per cent failed to carry out prescribed treatment. The economic status of the patient apparently had little to do with completion or non-completion of treatment.

From previous experience with patients suffering from ocular disease, it is assumed that the most common reasons for the pervading lack of completion of the treatment recommended were: fear of surgical intervention, lack of understanding of the condition, discouragement, and fear of and inability to meet the social and emotional problems arising from the condition. Constructive interpretation of the findings to the patients (or to their parents, in the case of young children) by the medical social worker will prevent the waste of ophthalmologic service and contribute greatly to conservation of vision. Miss Price suggests that the following patients routinely be referred by the physician to the social worker for social study and planning:

A. All patients whose social problems appear to be obstacles to prescribed medical treatment and recovery.
B. All patients with certain diagnoses considered especially hazardous to vision, such as keratitis, iritis, glaucoma, cataract, progressive myopia, strabismus, optic neuritis, retrobulbar neuritis and tuberculous lesions.
C. All patients who refuse suggestions for surgical intervention and hospitalization.
D. All children referred for special educational plans.
E. All patients for whom lenses are prescribed which cannot be procured through regular channels.

A Case of Mustard Gas Keratitis Under Constant Observation for a Period of Twenty Years, T. L. de Courcy, *British Journal of Ophthalmology,* February, 1943, published monthly by The British Journal of Ophthalmology, Ltd., London.

The author had the opportunity of being in close touch with a case of delayed mustard gas keratitis for twenty years. In summing up his observations during this period, the following points seem worthy of note:

1. To judge from the scarring of the corneae when the patient was first seen, actual ulceration must have taken place at the time of gassing (1918).
2. Subjective symptoms appeared four years later with photophobia and report of "bad judgment" in visual efforts.
3. Rapid changes in refraction in the "pre-ulcerative" period of those years (1922–25) in which degenerative changes presumably took place in the corneae to account for these variations in refraction.
4. Anesthesia of the corneae first noted in 1924 but probably present since the initial attack.
5. The necessity for constant observations of this particular case in order to remove aberrant lashes and watch for foreign matter which might injure the anesthetic corneae.
6. The onset of the ulcerative stage seven years after his initial gassing, and its recurrence at intervals during the next twelve years. The moderate vascularization accompanying these attacks.
7. The deposit of cholesterin and other crystals in the corneae in the earlier stages of the disease and their gradual disappearance.
8. Drugs used as drops had to be prepared in much weaker solutions than for ordinary keratitis. Pure carbolic must never be used.
9. The disappointing results of tarsorrhaphy, since soon after reopening the lids, ulcerations again took place.
10. The possible good results of *x*-rays carefully applied.
11. The undoubted benefit of short-wave diathermy.
12. The protection provided to the corneae by fitted contact lenses and the striking increase of visual acuity resulting from their use.
13. The late appearance of "islets" of blood over the pupil areas and their disappearance after peritomy.
14. The fact that no focus of infection was found in the patient to predispose him to mustard gas keratitis—the usual tests having been made at the time of his first attack of ulceration.
15. Lastly, that after twenty adventurous years the patient leads a practically normal social and business life.

The Measure of Night Vision, N. Bishop Harman, *British Medical Journal,* January 9, 1943, published weekly by the British Medical Association, Tavistock Square, London, W. C. A standard expression of quality of night vision is proposed by the author, to be used in conjunction with the disk-spotting test. This test is based on a direct measurement of light, so that results may be exactly comparable and a definite measure may be made of the minimum light necessary for an individual to see an object or objects. The light is reflected from illuminated disks on a black velvet background and the distance found at which the disks can be seen and counted. The illumination is from the "standard candle," and there can therefore be such an exactness of the light used and of its measurement that the returns of the examination are definite. There has been found to be a common average for all classes and ages: a distance of 5 meters, at which point the light is 1/1075 of a foot-candle.

If the figure 5 is used as the denominator of a fraction of which the numerator is the reaction of the particular individual tested, the resultant figure will express the facts of the finding in a way readily understandable to anyone. If the figure registered is 5/5, everyone will know that night vision is normal. If the figure is 2/5, it is clear that night vision is poor; if it is 8/5, no one will doubt that it is exceptionally good. These figures carry an exact appreciation of the night vision of the person examined, just as the notations of the Snellen test carry for visual acuity.

Pathological Findings in Eyes Enucleated for Glaucoma Due to Sarcoma of the Uvea, Louis Bothman, M.D., *Illinois Medical Journal,* March, 1943, published monthly by the Illinois State Medical Society, 30 N. Michigan Avenue, Chicago. Of 40 cases of sarcoma of the uvea, there were four in which sarcoma was not suspected when the eyes were removed. The clinical diagnosis in all cases had been secondary glaucoma. The author points out that these cases should serve as a warning, in all cases of secondary glaucoma of unknown etiology, against a detension operation. The operation of choice for blind, painful eyes, when no study can be made of their interior, is enucleation.

Book Reviews

INDUSTRIAL PSYCHOLOGY. Joseph Tiffin, Ph.D. New York: Prentice-Hall, Inc., 386 pages.

This book covers the entire field of industrial psychology, while devoting appropriate attention to employee selection and placement. Fitting the worker to the job is of importance today from the standpoint both of the war effort and of assuring the individual worker happiness and satisfaction on the job. And no writer is better qualified to speak on placement in industry and the broader field of industrial psychology than Dr. Tiffin.

If anyone doubts the high scientific plane to which industrial psychology has ascended, he should read Dr. Tiffin's chapters discussing visual problems in industry, industrial attitudes and morale, industrial inspection, accidents and safety, dexterity and manipulative tests, employee testing and industrial merit rating. The author has consistently maintained that placement tests are good tests only if they succeed in selecting employees for certain jobs who are more adapted to those jobs than would have been the case if the employees had been otherwise selected. In other words, the tests themselves must be tested and the criterion is the result obtained.

More space is given to visual problems of industry than to any other subject. After describing many experiments in which analyses of visual performance were made in relation to ability on the job of thousands of workers, it is concluded that no single visual test is a satisfactory placement test, but rather the test or tests must be selected for the specific job on which the worker will be placed. A battery of tests, including visual acuity for near and far, depth perception, color vision and phorias (postural characteristics of the eyes at appropriate distances), offers a very satisfactory all-round rating of visual performance.

Instances have been found, the author points out, in which arbitrary minimum standards of vision have not only failed to select the better potential employees, but actually selected the poorer ones, as, for example, where near vision is needed and the

eyes have been tested at the usual distance of 20 feet. Employees and applicants differ just as markedly in visual characteristics when they are adequately measured as in any other characteristics, and these differences correlate in many respects with differences in job performance.

Another study indicates a relationship between poor vision and accident experience. In a group of several thousand steel mill employees unclassified as to job, those who failed certain tests had more accidents on the average than those who passed. The author indicates, however, the need for separate determinations for each job in order to take into account specific job hazards and job visual requirements.

Of unusual interest are the experiments with special occupational spectacles conducted under the medical supervision of Dr. Hedwig S. Kuhn. The prescriptions for the spectacles include a component, over and above what would be indicated for ordinary lens correction, that has the same optical effect as though the work were removed farther from the eyes, but without loss of visibility. In psychological terms these lenses modify the visual requirements of the job so that they come within the range of adaptability of a larger number of potential operators. These spectacles are worn only on the job; they are part of the job equipment or tools. At other times each operator wears only those spectacles, if any, which are desirable for general use. Operators using the occupational spectacles showed a five per cent increase in production over control operators.

Also discussed are job simplification, visual classification, visual maintenance of personnel, periodic retests of vision, the visual survey, maintenance of occupational eye wear, the objectives of a visual program, and employee education in vision.

This book will do much to extend the application of psychology to industrial uses—a challenging and rapidly expanding field, which has timely implications for the war effort.

—CLIFFORD KUH, M.D.

FIRST AIDS IN READING DIFFICULTIES. S. Weir Newmayer. Philadelphia: North American Printing Co., 1940. 162 p.

The author's contact with reading disability cases has convinced him that these cases are not understood because little consideration has been given to certain medical factors. As a specialist in ophthalmology and child hygiene, he interprets reading largely in terms of eye-muscle co-ordination. One gains the impression that the author considers nothing but vision as really significant in reading, for in his opinion, reading is one hundred per cent vision. He is obviously out of sympathy with methods of diagnosing ability to read which tend to ignore the rôle of vision in reading. He makes the point that visual acuity may register normal and the child may still be a poor reader because of visual defect. However, he gives no comparison statistics, reports no controlled experiments to show the extent to which vision can and does affect reading.

The contents of the book belie its name for there is relatively little information about reading disabilities or remedial methods. There are chapters on binocular vision; influence of planes of vision; accommodation; tests of visual acuity; diseases and defects of the visual organs; visual confusion; hygienic conditions for reading; and eye training. Many important facts about the visual organs are given, the physiological factors in seeing; and there are some excellent diagrams to illustrate the facts, but this information is not linked up to the reading process.

There is a great deal of information about the physiology of the eyes that does not give much background for understanding the rôle of the visual organs in reading. There is considerable discussion of surveys of vision in school children without any reference to reading problems. However, the factual information and practical advice given with regard to vision impress the reader as helpful. Recommendations of the Illuminating Engineering Society on lighting school buildings are included.

A chief limitation of the contents is the author's failure to back up his opinions with scientific evidence. In addition, his understanding of the reading process psychologically is limited and his ideas may on that account be misleading to teachers. The diction is poor, paragraphs are poorly organized. The disjointed statements are difficult to follow.

In many paragraphs the author fails to make any clear-cut point.

He tends to skip about from topic to topic with little connection from one to the other and the lack of paragraph and section headings makes the content difficult to follow. Some topics, for example, such as "Special Classes for Mentally Retarded" appear to be quite irrelevant. —GERTRUDE HILDRETH, PH.D.

OPHTHALMOLOGY AND OTOLARYNGOLOGY. Prepared and edited by the subcommittee on Ophthalmology and Otolaryngology of the Committee on Surgery of the Division of Medical Science of the National Research Council. Philadelphia: W. B. Saunders, 1942. 303 p.

This is one of a recent series of manuals on war medicine and surgery. The first section of this volume deals with ophthalmology. Its aim, as stated in the preface, is to enable the medical officer stationed in the field or in an evacuation hospital to cope with the most common eye injuries and diseases, at least until he can transfer the patient to a base or general hospital where an ophthalmologist is available.

The manual covers in a simplified and abbreviated form the fundamental phases of the subject, namely: functional tests, including some simple tests for the detection of malingering; methods of examination of the eye; sudden blindness or impairment of vision from various causes, including psychoneurotic visual disturbances; acute inflammations; injuries of the eye and of adjacent regions; and surgical procedures.

The book is a compilation by several authors and suffers some of the faults which so often are a concomitant of this form of writing. Its chapters lack continuity, there is overlapping of subjects while many topics are either entirely omitted or receive only brief mention, and the quality of the various chapters is not uniform or consistent. However, it should prove very useful to those for whom it is intended, since it bears directly on the problems encountered among troops.

The chapter on surgery and methods of anaesthesia, written by Dr. William L. Benedict is to be especially commended for its conciseness, coupled with a clarity of exposition which is greatly aided by the numerous illustrations.

Even though a book of this size can hardly be intended as a reference work, its usefulness in this direction is greatly enhanced by the detailed index and by the numerous cross-references in the text. —ADOLPH POSNER, M.D.

Contributors to This Issue

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James Mallory Carlisle, M.D., is Medical Director of Merck and Co., and chairman of the Committee on Industrial Hygiene and Health of the Medical Society of New Jersey, among numerous other professional activities in state and national medical groups.

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